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April, 1929

W. R. C. SMITH, Publisher
T. W. McALLISTER, Editorial Director ROBERT W. PHILIP, Editor

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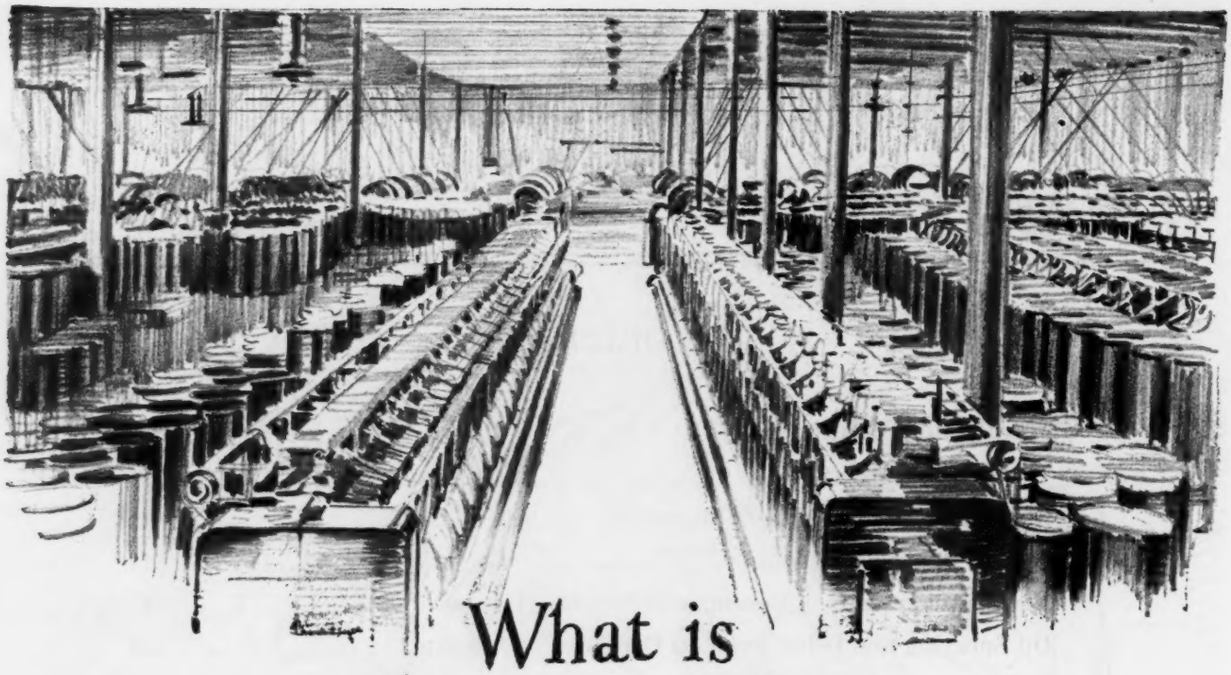

What is this new order dawning in the Textile Industry?

FOR some time we have seen a new order dawning in the textile industry with results so noteworthy, from the standpoint of operation and cost, as to merit serious thought and careful investigation on the part of mill owners.

Cases are not for the printed page, because words in cold type are brittle and incur the risk of painting a misleading picture since no two plants are alike. However, we shall be glad to explain more fully to interested executives or financial interests and to conduct an examination to give a conservative picture of the results which can be obtained.

We believe you will find investigation well worth while.

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Vol. 93 **COTTON** No. 6

April 1929

The 71st Congress Meets

POSSIBLY the best aspect of the assembling of the 71st Congress in an extra session is the fact that Summer is near at hand and may be expected to make the body's operations relatively brief. In calling the session President Hoover mentioned two subjects needing attention, the farm situation and the tariff. Once in session Congress may do or not do as it pleases. It is unlikely, that much more than preliminary attention will be given to subjects other than the ones specified by the President. But constructive steps may be taken towards the handling of other subjects at the long session beginning in December. Programs of inquiry may be outlined for committees and perhaps in some cases for special commissions so that complicated subjects can be well in hand when the regular session begins.

It is to be hoped that Congress at the special session will get the farm problem off the front pages at least for a while. That is about all that will—or can at this time—be done with it. The problem has been a foremost national one now for nearly ten years. Practically nothing of account has been done about it—for the reason that, aside from possibly revolutionary legislation of a kind that even farmers have not asked for, little can be done about it. This country now is more industrial than agricultural and all the portents are for widening the present urban-rural relationship. In their hearts, so to speak, farmers have accepted this condition and probably do not want it changed. Unless steps are taken to reverse the trend, the effect of the change on farming can be ameliorated only.

Farming has adjusted itself measurably to a subordinate position. It has recovered from most of the pains of transformation, though at all times some section of it, as well as industry, will be in the dumps.

Congress will perform a gesture of relief, which, let us hope, will close the debate for the time being. The gesture will be in the form of a board—when nothing can be done Americans always set up a board—with a lot of seeming authority, but really to serve as a mere buffer.

If what is said by leaders in dominant places and by the President is to be taken as indicative not much will be done about the tariff. The agricultural rates no doubt will be revised upward—towards the sky in most instances. Since they apply in most part to products of which exportable surpluses are produced many of the high rates will be in the main fictional.

The tariff program contemplates revision of a "limited" number of industrial rates. These should include textile duties, and especially those on cotton goods, to which the Administration is rather directly committed. But it is slightly doubtful if the exigencies of tariff making will permit of "limited" revision only. These exigencies may make necessary a rebuilding of the entire tariff structure. The Senate will be the deciding body as to this. But mid-Summer heat in Washington, and other things, argue against a full revision of the tariff at this time.

In the end Congress may do little and yet much concerning the tariff. In all probability comparatively few rates will be disturbed, with the President and the Tariff Commission given leave to make quickly any further changes found to be desirable.

Coming Convention Dates

Joint Meeting, American Cotton Manufacturers' Association and National Association of Cotton Manufacturers, Hotel Traymore, Atlantic City, N. J., Friday and Saturday, May 24th and 25th.

Knitting Arts Exhibition and Convention of National Association of Hosiery & Underwear Manufacturers, Commercial Museum, Philadelphia, Pa., April 15th to 19th inclusive.

Annual Convention, Cotton Manufacturers' Association of Ga., Cloister Hotel, St. Simon's Island, Ga., Thursday and Friday, April 25th and 26th.

Annual National Convention, Phi Psi Textile Fraternity, Charlotte, N. C., April 19th, 20th and 21st.

Semi-Annual Convention of Texas Textile Association, Dallas, Texas, Friday and Saturday, May 31st and June 1st.

KNITTING Joins *in the Southern Migration*

By R. L. P. Reifsneider

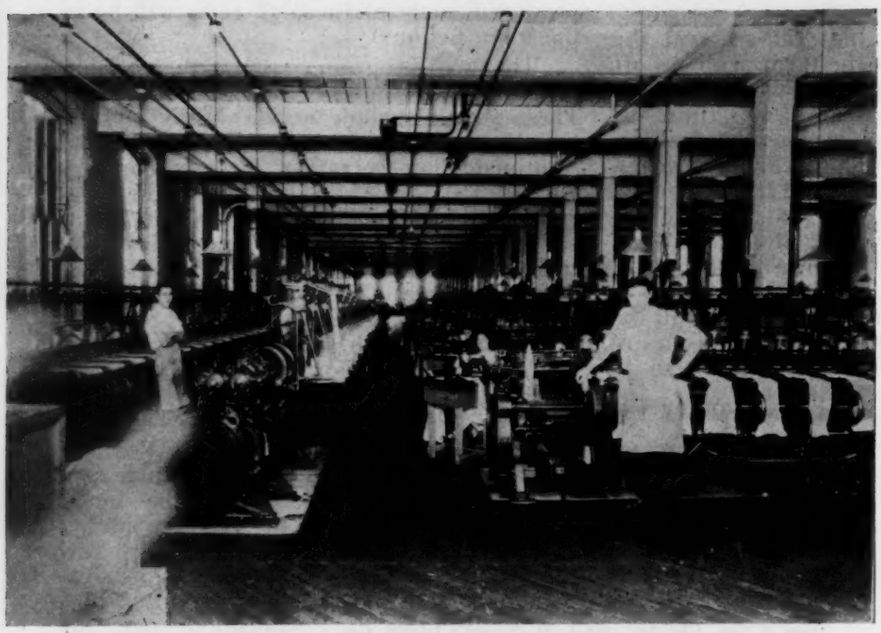
HERE is an interesting discussion of "the Southward movement" of mills. While not revealing any particularly new facts, Mr. Reifsneider shows how the trend has affected knitting, as well as cotton manufacturing plants. He bases the discussion upon the recent decision of two prominent knitters to "go South", and recalls prediction of several years ago which failed to come true, as to the significance of the then pioneer movement Southward.

* * *

RATIFICATION a few weeks ago by the stockholders of the Cadet Knitting Co. of Philadelphia, of an expansion plan which embraces the establishing of a full-fashioned hosiery mill at Columbia, Tenn., for a large increase in the company's output of full-fashioned hosiery, awakened added interest in the matter of industrial migration to the South.

Almost coincident with the first intimation of the Cadet company's intentions came an announcement that The Lengel-Fencil Co., of Reading, Pa., would remove its seamless hosiery plant to Anniston, Ala.

Both the Philadelphia and Reading concerns are well established, and as each was known to have given painstaking study to the many questions involved in so important a question as that of removal to the southern field, after years of successfully operating large plants in their respective communities, others engaged in similar pursuits are pondering anew the expediency of a shifting of their bases of operations for sharing in what are, in the minds of many industrial chiefs, the advantages offered by interests in the South which are and for some time have been promoting the welfare of their communities.



Section of Knitting Department, Cadet Knitting Company Mill in Philadelphia.

As has often been cited, translation of firmly-rooted establishments variously located to distant localities in the South received much impetus from the shifting of the cotton goods industry from New England states. I recall an address of an eastern manufacturer at a gathering of mill men some few years ago. In the course of his remarks on the migration of industry he made reference to a large plant established a few years before, lauded the enterprise of its projectors and complimented the building engineers for having designed and constructed what he said was a model manufacturing building, and said: "Those great modern looms are still running, turning out a lot of goods and employing hundreds of operatives, but they are running in a southern mill."

It is to be assumed that in the earlier days of ripping out ponderous looms and auxiliary machinery and setting them up in what was at the time comparatively new territory for those engaged in such removals, and placing dependence for successful operation on new mill help, required courage. But it hardly can be said that these pioneers discovered the South as a promising industrial field. *Southern initiative had paved the way, with southern capital.*

One does not have to hark back far to the time when southern cotton yarn had a struggle in meeting eastern competition; when many spinners, weavers and knitters were prone to make odious comparisons to the detriment of the South. The first mercerizing plant to be set up in the South was looked upon by numbers of textile operators as a dubious venture. It proved but the beginning of a new industry for the section that was steadily visualizing to the world the prophesy that it was "the land of promise." And subsequent developments caused a well-known statistician to say several years ago, "I believe the South is the best guess."

As true as when the sentiment first was uttered many years ago, "one thing leads to another." One thing following the leads of years was the establishing of the full-fashioned hosiery industry in a southern state. It probably is within the bounds of truth to say that in the last ten years there has been no more spectacular and substantial growth in the textile South than in this one division, that field already having come to be recognized as the seat of the seamless hosiery industry.

A nationally known figure in the hosiery trades, than whom few men have a more intimate knowledge of the shifting of bases of industry, made the prediction during a discussion of the subject of my humble contribution to the pages of COTTON (January 1929) that "within ten years more than fifty per cent of the full-fashioned hosiery produced in American mills will be knitted south of the Mason and Dixon line."

Accepting at its face value a recent report of a survey revealing that 102 textile companies were organized in the South in 1928, and that almost one half of them represented knitting units, development there in textiles may be regarded as more than maintaining the pace of previous years. Two recruits in the first month of 1929 from the northern hosiery field—the Cadet and Lengel-Fencil companies would appear as marking the beginning of another important chapter in the history of industrial expansion and diversification of industry.

Section of Boarding Department, Cadet Knitting Company Mill in Philadelphia.

Rayon Producers Going South.

Producers of chemicals have been heading South for some time, in line with the adage, "one thing leads to another," and it is not inappropriate to refer to the establishing of large rayon producing plants in the South for sharing in its vaunted advantages while invading the world's chief field of cotton. With domestic producers of rayon building up new towns in the South, it seems logical that several foreign companies should have chosen southern sites for their American plants—such as Bemberg and Glanstoff, Enka, and American Chatillon.

Whether for effect or harboring an ingrain belief in the proposal that the South was approaching the saturation point in industrial development, some presumably over-cautious persons have been predicting a turn in the tide of migration. A recent utterance to this effect, not accompanied by an analysis for its warrant, recalls several predictions that have been sidetracked and must be viewed as far wrong now as when they were ventured. In fact, names might be mentioned of persons who would like to forget their offhand forecasts.

Some time after the seamless hosiery industry had been firmly planted in each of several southern states, a manufacturer prominent in that industry in Pennsylvania who had thought of joining the procession, expressed an opinion that the pendulum soon would be swinging in another direction, and concluded to make the best of an increasingly serious problem where he was and still is, admitting now that he missed his guess. A manufacturer of seamless hose looked over several southern sites, contemplating engaging in the production of silk full-fashioned. He yielded to misgivings about "going so far from home". That was three years ago. He said quite recently, in recounting his subsequent experience, "If I had stuck to first impulse and gone South, I would have made money. I stayed here and all I have to show for hard work is a living. I've been plowing right along in the wrong field."

The saturation point for the South will be due about the time it is reached in the Far West, if such a transition there could be thought of. Industrial growth in the South has been far more rapid than in even the Central West and, in the opinion of the writer, will extend to the gulf boundaries, enriching the cotton belt, in not much more time than it took for industry to get a footing on the Pacific slope, after crossing and adding to the wealth of the grain belt. Speculating on saturation for any phase of activity cannot ignore increases in population, changes in modes of living and the requirements for keeping in step with the changes.

Dyeing *Raw Stock* Cotton *in* CIRCULATING MACHINES

By Sherman Converse

Though Most Simple of Dyeing Processes, Raw Stock Dyeing in Circulating Machines Involves Many Cardinal Rules and Regulations, Some of Which Are Discussed in this Article, That Must Be Followed Carefully for Good Results.

THE dyeing of raw cotton on the circulating type machine is in a good many respects easier to handle and on the whole presents fewer problems than almost any other form of dyeing. There are fewer traps into which the unwary dyer may fall in unguarded moments and more chance of his finding a way out of a difficulty should he encounter it. For example, if a batch is dyed unevenly, it is not necessarily ruined, for it may be mixed in the operations previous to spinning in such a way that the yarn will be perfectly level. Or if a batch is slightly off shade it may be mixed with a sufficient number of batches of the correct shade as to render the difference unnoticeable. Moreover, should a dyeing be utterly ruined as far as the desired shade is concerned, there is a possibility that it may be dyed another color which may be utilized, since it may be made into any number of yarn, either warp or filling.

However, the dyer should, of course, be more interested in finding out how to prevent bad work than in finding out how to remedy it, and it is the purpose of this article to point out some precautions which should be taken, as well as give a general idea of the procedure followed in dyeing the main classes of colors on this type of machine.

Loading the Machine for Dyeing.

The operation of loading is a very important one. The cotton should be well broken up so that there are no hard lumps which the dye liquor would not penetrate thoroughly. Also it should be distributed evenly and packed down uniformly to prevent "channelling". If there are places in the batch which the liquor finds it easier to get through than others, channelling through these places will occur and an uneven dyeing will be the result.

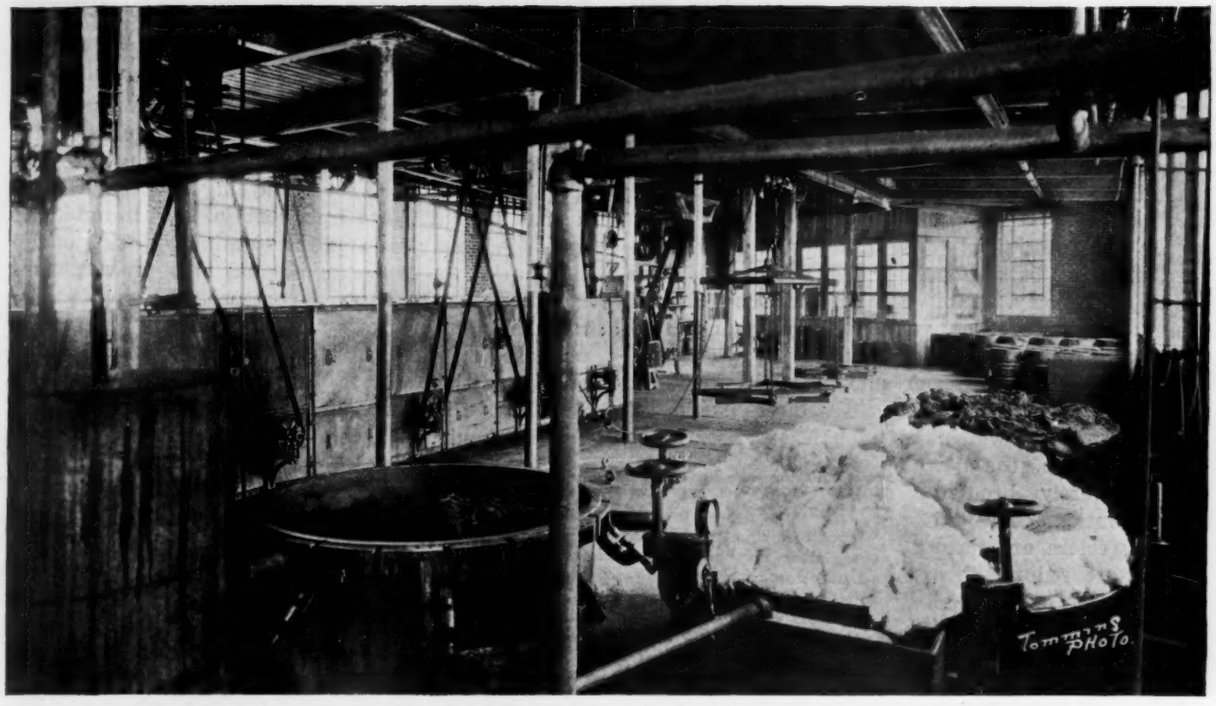
Boiling Out the Fiber.

The object of the process known as boiling out is to remove, insofar as possible, the natural waxes, impurities, dirt, etc., which are always present in raw cotton and which would prevent the cotton from wetting out thoroughly and evenly, thus interfering with the successful application of the dye. The process consists of boiling the material for from ½ to 1½ hours with some alkali, usually soda ash, or with a combination of soda ash and some soluble oil, or in plain water. The process selected depends to a large extent on the use to which the cotton is to be put, but whichever process is used there should be no doubt that boiling occurs. Each dyer must decide for himself which process is best adapted to the type of work he is doing. In general, a half-hour boiling with two per cent soda ash gives very good results for direct and sulphur colors. In the dyeing of vat colors the use of a good soluble oil is desirable. The oil acts as a dispersing agent for emulsifying the natural waxes, eliminating them to a greater extent, and also softens the fibers, thus allowing better penetration of the dye.

In some cases in the dyeing of direct and sulphur colors on these machines it is possible to combine the operations of boiling out and dyeing. That is, the batch may be dyed and boiled out at the same time. Although, as before stated, the purpose of boiling out is to remove the natural waxes and other impurities from the cotton, this, strictly speaking, is very seldom accomplished in actual practice. In a good many cases where raw stock is boiled out previous to dyeing, the boil-out liquor is used in the dyeing. That is, after the cotton has been boiled out for the required length of time, the dye solution is added to the boil-out solution and the dyeing is carried out. Therefore, all the impurities present in the cotton to begin with, are present all through the dyeing. Even if the batch is drained and washed after the boiling operation, the mass of cotton acts as a filter retaining most of the insoluble material. The boil-out then, in this case, is really little more than a wetting-out process which puts the cotton in such a condition that it will absorb the dye. It does not seem illogical, therefore, to assume that good results may be obtained by carrying on the two processes at the same time.

The secret of success in this method of dyeing, as indeed in any method on circulating machines, is the securing of a uniform distribution of the actual dye solution throughout the batch before the color starts to exhaust. This presents no difficulty because of the fact that there is ample time for the dye to spread to all parts of the batch before the cotton has become sufficiently wet out to be in a condition to absorb the dye. Then as the temperature is gradually raised, the cotton becomes more thoroughly wet out and absorbs the dye gradually and evenly. The use of an efficient scouring or wetting-out agent is necessary for best results. This combining of the two processes of boiling-out and dyeing is, of course, very much worth while where good results are obtained because of the time saved and the consequent increase in production.

It is obvious that this method cannot be used for



A MODERN RAW STOCK DYEHOUSE

In the right foreground, a pot has been loaded with cotton to be dyed, while in the machine to the left can be seen a batch dyed and ready to be lifted out. Immediately behind the freshly-loaded machine is the batch that came out of this. To the left of this, suspended from the electric hoist, is an iron framework with which the dyed cotton is swung out of the machine. Automatic extractor and dryer in left background. A boiling-up tank at the left in foreground. The storage tanks are on the outside of the building, the liquor being pumped into them from the machines.

vat colors, as the dyeing temperature for these colors is not high enough to wet out the dye sufficiently.

Using the Direct Colors.

These colors, on the whole, are the best behaved of all dyestuffs and, with very few exceptions, are easily applied on this type machine. After loading, the machine is filled with the correct amount of water and brought to the proper starting temperature. If the batch has not been previously boiled out, it is wise in almost all cases, to add one or two per cent of an efficient wetting-out agent and circulate five minutes before adding the dye; if the batch has been boiled out, this may or may not be necessary, depending on the dye or dyes used. The thoroughly dissolved dye is then added slowly and circulated until it is thoroughly distributed throughout the batch. The temperature is then raised gradually to the boil and the dyeing continued for the required length of time, usually one hour. The salt should be added in two parts, the first 30 minutes after the start of the dyeing, and the second five or ten minutes later.

The direct colors vary a good deal in their properties, such as solubility, level dyeing, exhaust, temperature at which exhaustion occurs, etc. Most of them exhaust to a greater extent as the temperature increases, although there are a few which require a temperature under the boil to obtain the greatest degree of exhaustion. A few will go on the fiber in the cold; others will not start to exhaust under a boil.

Since it is desirable, in order to obtain best results, to have the dye uniformly distributed throughout the batch before exhaustion starts, it will be seen that the proper starting temperature has a good deal to do with the success of the dyeing. The dyer should make himself as familiar as possible with the properties of the dyes he is using as he will be amply repaid by the results obtained.

In dyeing shades which require a combination of dyestuffs, care should be taken to secure that combination whose dyes are as nearly alike in properties as it is possible to obtain. If this is not done, the dyer is very likely to find that one of his colors has deposited itself for the most part on the outside of the batch, leaving the rest an entirely different shade.

Dyestuffs used for shading should be carefully selected, those which exhaust only at a boil, being best suited in using small amounts to bring a batch up to shade.

Dyeing With Sulphur Colors.

This very important class of colors is also well adapted for use on machines of this type. The dye is thoroughly dissolved with the proper amount of sodium sulphide, and one or two per cent of soda ash is added to keep an alkaline condition in the dyebath. The machine is filled and the dye added slowly. Some of these colors are dyed at a temperature just under a boil; others give best results when started at a boil and dyed in a cooling bath. At least one, the Bordeaux, is best dyed at 140-160 degrees F. As in the case of the direct colors, the starting temperature is important. A few of the sulphur colors are sufficiently level dyeing to allow of their being added to the batch at a temperature just under the boil. Others should be started at a lower temperature and raised

gradually. The dyeing time is usually one hour, though, in some cases where the batch has not been boiled out, a little more time may be necessary to secure the maximum degree of exhaustion. The amount of sulphide varies to some extent with the different colors, the Bordeaux and the greens taking less and the yellows more than the others. As a general rule in mill practice, equal amounts of dye and sulphide are used.

In dyeing straight color shades with sulphur colors, standing baths should be used from the standpoint of economy. These baths may be used for different lengths of time, varying with the amount of dirt in the cotton and the chemicals used.

There are two types of sulphur colors, known as direct dyeing and vat dyeing. The direct dyeing colors are those on which the sulphide exercises no reducing action, the dye being merely brought into solution. The vat dyeing colors are those which are reduced to a greater or less extent by the sulphide as well as being dissolved. The latter type require oxidation after the dyeing is completed. This may be done by blowing the batch immediately after the dyeing (provided the machine is of the closed type and air is available) or by the addition of two per cent perborate or chrome in the first wash. The first method is of course the cheaper and gives very satisfactory results. In case the batch is to be after-treated to improve the fastness by the usual copper chrome method, the chrome also serves to oxidize the batch. Cotton dyed with sulphur colors should be well washed in order to completely remove the sulphide, which if left in the batch, increases the tendency of these colors to tender the fiber. Sulphur blacks are sometimes after-treated with sodium acetate or ammonium chloride, which neutralize the sulphuric acid formed by the breaking down of the dye, thus preventing the tendering action. A soaping at a boil serves to brighten the shade and prevent crocking.

THE handling of direct, sulphur and vat colors on raw stock cotton are discussed in this article by Mr. Converse, after reference to the importance of careful loading and mention of the boiling-out process and its bearing upon the subsequent application of the dye.

A later article by another mill man will also discuss raw stock dyeing, from a different angle, dealing more with detailed discussion of the various steps involved in the dyeing procedure. This will appear in an early issue.

The Vat Colors.

Owing to the decided trend toward fast colors, the use of vat dyes on raw stock machines, as well as other types, is increasing. These dyes, because of their peculiar nature, require more careful handling than any of the others. Being insoluble in water, they are reduced with sodium hydrosulphite to a leuco compound which is soluble in a strong solution of caustic, and are applied from this alkaline hydrosulphite bath. After the dyeing is completed, the leuco compound is oxidized, forming the original insoluble dyestuff on the fiber.

In reducing these dyes the barrel or tank is filled with water, the amount depending, of course, on the amount of dye. Not over 20 pounds of dye should be reduced in 50 gallons of water. The caustic is then added and dissolved, the dye is added and stirred, and finally the hydro. If powder brands are used they should be made into a smooth paste before reducing. The bath is then brought to the correct reduction temperature and allowed to stand for one-half hour, during which time it should be well stirred.

The batch should be boiled out with two per cent soda ash and two per cent of a good soluble oil for 45 minutes and washed well. The machine is then refilled, brought to the correct dyeing temperature, and a small amount (½ to 1 per cent) of caustic and hydro are added and circulated for 10 minutes. This operation is known as springing and is a precautionary measure taken to insure the presence of a slight excess of caustic and hydro in the bath. If any penetrating or retarding agents are to be used, they are also added at this time.

The dye is then added slowly and the dyeing run for the required length of time. At the expiration of the dyeing time the batch is drained thoroughly. Then comes a very important point in the dyeing operation—the oxidation. If the machine is of the closed type and has an air line connected, it is blown for ten minutes. The machine is then refilled, and as the first water runs in two per cent perborate or chrome is added and the temperature raised to 120 degrees F. This is run for ten minutes and the batch washed. It is then soaped at a boil for 15 minutes with two per cent soap. The soaping indicates whether or not the batch has been properly oxidized, for if it has not, the bath will show a good deal of color. It is also an important operation, as it serves to develop the shade—giving brighter dyeings and increasing the fastness properties.

The vats differ a good deal among themselves in dyeing properties such as reduction temperature, dyeing temperature, concentration of caustic and hydro required for reduction, affinity for the fiber, etc. The reduction temperature for most of them is from 100 to 140 degrees F. Although in a few cases a higher temperature is necessary. The dyeing temperature ranges from 80 to 140 degrees F. for the majority with a few exceptions which require higher temperatures. The vat dyes have more affinity for the fiber than the sulphurs. They exhaust quickly as a rule, but are generally dyed for a full hour to procure the maximum fastness. A few require the addition of Glauber's salt to exhaust the bath. Unlike the direct colors, an increase in temperature does not increase their affinity for the fiber to any great extent. A temperature higher than that recommended tends to weaken and dull the shade. Most of these colors will dye cotton in the cold. In some cases, especially in light shades, the addition of a retarding agent such as glue to the dyebath is necessary to obtain level dyeings. The glue also aids in holding the dye in solution. There is a class known as cold dyeing colors which are dyed together in the cold (80 degrees F.) These dyes require less caustic than the others. In

(*Continued on page* 676.)

New Developments in *Spinning* and *Carding* Discussed

Long Draft and Variable Speed Motors on Spinning, New Card Clothings, Feature Georgia Mill Men's Meeting at Tech

THE Spring meeting of the Textile Operating Executives of Georgia was held at the Georgia School of Technology, Atlanta, Ga., on Tuesday, March 19th. Carding and spinning subjects were discussed in accordance with a previously prepared questionnaire. The morning session was devoted to spinning, this being a change from the regular procedure of discussing carding at this session, and the carding questions were covered in the afternoon session. General Chairman J. W. Hames, superintendent of the Exposition Cotton Mills, Atlanta, presided at the meeting, which was attended by operating executives of Georgia mills with visitors from several other states. The attendance was one of the best on record, and the discussions covered a range of interesting topics. A complete report of the discussion will be found in the following story. Albert Lehmann, Jr., superintendent of the Dixie Cotton Mills, LaGrange, Ga., conducted the morning discussion on spinning, and the afternoon session on carding was conducted by George S. Elliott, superintendent, Pacolet Mfg. Co., New Holland, Ga.

Long Draft Spinning

MR. LEHMANN opened the discussion with a question with reference to long draft spinning, and J. A. Sorrells, superintendent, Gainesville Cotton Mills, Gainesville, Ga., was the first to give his experience.

"We have one frame of long draft spinning which we put in in 1927, and we have run various tests on it," he said. "Running it at 118 r.p.m., front roller speed, with 15/16-inch staple, from 3.92-hank double roving, making 30s or a little lighter with a draft of 16.47, the breaking strength was about three or four per cent stronger than on our short draft on inch-staple cotton. The turns of twist were 26 per inch, and the end breakage per thousand spindles per hour was 31."

He said in response to a question from G. S. Jones, overseer of carding, Sibley Mfg. Co., Augusta, Ga., that he had made no special preparations of the roving for the long draft. It happened that he had a sideline of 21s yarn, made from 3.92 roving, and in putting in the long draft on 30s, he had simply used this roving for this frame. He uses regularly a 5.72-hank roving with short spinning draft on 30s, from 1-inch staple. He said he is putting in 4.75 twist multiple in the yarn, and when Mr. Jones asked about the twist in the roving, Mr. Sorrells said this was about 1.25 times the square root.

"Don't most carders nowadays put in more twist than that?" asked Mr. Jones.

"Well, we do on the finer rovings," answered Mr. Sorrells. "We run 1.35 on the 5.72-hank." He added, in reply to Mr. Lehmann, that he did not take out any twist in spinning for the long draft, using the standard 4.75 warp multiple, the same used on the regular draft frames.

J. C. Edwards, superintendent, Martha Mills, Thomaston, Ga., next volunteered his experience, and asked R. A. Butler, of his organization, to report on it. Mr. Butler stated that they have three tests running on long draft. On one, he is using .90-hank roving, single, for 15s; on another 2.50-hank double roving for 23s, and also 3.00-hank double on 23s. "Our end breakage on the 15s was around 60 breaks per thousand spindles per hour, and as near as we can compare it with our regular work it is running along about the same as 4.00-hank double on the short draft for 15s."

Difference in Breaking Strength.

George S. Elliott, who is now superintendent, Pacolet Mfg. Co., New Holland, Ga., asked Mr. Butler if there was any difference in the breaking strength of the 23s made from 2.50-hank and 3.00-hank roving. Mr. Butler replied that the yarn made from the 3.00-hank roving showed the better strength. The draft on this, he said, was a little better than 16, and comparing all of the yarns, 4.00-hank double on the short draft, and 2.50-hank and 3.00-hank on the long draft, the 3.00-hank on long draft showed up a little better than the others; being an increase of 5 to 7 per cent over the regular draft. This was on filling-wind warp, while Mr. Sorrells uses warp wind. I. L. Blaylock, overseer carding, Erlanger Cotton Mills, Lexington, N. C., asked Mr. Butler about his twist multiple, and he said he uses 1.20 multiple in the .90-hank roving for 15s.

Further inquiries of Mr. Edwards and Mr. Sorrells developed the fact that Mr. Edwards uses a 7-inch traverse and 2-inch ring; Mr. Sorrells a 6½-inch traverse and 1⅝-inch ring on 30s. Mr. Edwards' front roll speed on 15s is 170 r.p.m. Mr. Edwards explained that they made no changes at all in the card room, and that they make the .90-hank roving from single process drawing, taking it from the intermediate to the spinning frame. He added later that while they are now experimenting with long draft, it is planned later to equip the mill, which is being enlarged, on this system.

J. W. Hames, superintendent. Exposition Cotton Mills, Atlanta, Ga., made the next report on long draft. "We have twelve frames on long draft, and our

end breakage averages 290 ends per thousand spindles in ten hours, or 29 per thousand spindles per hour," he said. In reply to A. B. Peterson, overseer of spinning, Pacolet Mfg. Co., New Holland, Ga., he said one spinner was used for this test, ten hours straight run, and that an extra hand was used to check the end breakage and causes, not putting this work on the spinner. Asked for details, Mr. Hames furnished this further information: His yarn is 23s warp, and he makes it out of 1.50-hank single roving, with a front roll speed of 124 r.p.m., and a spindle speed of 8,800 r.p.m., using a No. 2 traveler. The draft is 16.56, and he puts in 22.78 turns of twist, using 7/8 to 15/16-inch cotton. He uses a 6¾-inch warp bobbin, on 1¾-inch ring, and made no changes in the card room in preparing for long draft except to insert a little less twist in the roving. He explained that this 1.50-hank roving is taken direct from the intermediate, eliminating the speeder frame operation.

Will Adopt for Entire Plant.

"Is the breaking strength up to standard?" asked E. L. Sheridan, of the Ensign Mills, Forsyth, Ga., and Mr. Hames replied that the strength on the long draft was 8 to 10 pounds better than on the regular draft. His overseer of carding, Edwin Chandler, furnished the information that they are carding about 130 pounds a day per card.

C. K. Lawson, overseer of spinning, Goodyear-Clearwater Mills, Cedartown, Ga., reported on long draft next. He said they have been running one frame for about 18 months, using the same twist, same speed and everything as on the regular work. His regular work is 23s warp. On regular draft he used 4.50-hank, with a front roll speed of 131 r.p.m., twist of 21.9, spindle speed 8,900 r.p.m. Changing the hank roving to 2.50 for the long draft, he maintained the same conditions, except the twist multiple in his 2.50-hank for long draft is 1.20, and for the 4.50-hank it is 1.30.

"The records show, for the entire time, that we get a slightly better breaking strength and a smoother evener yarn with the long draft," said Mr. Lawson. "Making 22.50s, our draft is about 18.00, filling wind, 2-inch ring, 7-inch traverse, 1⅞-inch stroke. The end breakage per thousand spindles per hour on the long draft is 18, and on the regular draft, 18.7." He added that on the strength of the results of their tests with the long draft over the past 18 months, they are equipping their entire mill with the system, which will also be installed in an addition to be made in the immediate future. Answering further questions, he said he has a 3½-inch gauge frame. In going to long draft, he said, he changed the 4.50-hank speeder roving to 2.50-hank; the 1.50-hank intermediate roving to .93-hank; and the .50-hank slubber roving to .425-hank. The slubber roving is made from a finished drawing sliver of 56 grains.

Mr. Elliott asked here if anyone present had run into any troubles in connection with long draft.

"The long draft is harder to keep clean," replied Mr. Lawson, explaining that the system he is using carries an extra clearer, and that the clearers pick up more waste. "We are on the multiple system in the spinning room," he said, "and in changing over the entire mill to long draft, we figure we will have to put on one extra cleaner, for 33,000 spindles, to clean that back roll and the back under-clearer."

G. S. Jones asked Mr. Lawson if he had tried the long draft before making the changes in his roving weight. Mr. Lawson replied he had tried drafting 3.00-hank roving, but got much better results with the 2.50-hank.

"You can expect more short fiber droppings under the rolls on long draft than on short draft," said J. C. Edwards in answer to Mr. Elliott's question.

Variable Speed Motors on Spinning

THE next question presented by Chairman Lehmann referred to the use of variable speed motors on spinning frames. At the time of the meeting there was only one installed in Georgia; this was at the Gainesville Cotton Mills, and Mr. Sorrells was asked to report on it.

"We have had this in since December 11th, 1928," said Mr. Sorrells, "and it is on this same long draft frame that I told about a while ago." He explained that the motor starts with the empty bobbin at one speed and finishes the full bobbin with a higher speed for the front roller, etc. In his experiments, he said, he made one test starting with 123 r.p.m. on the front roll, going to 137 r.p.m. for the full bobbin, making 30s out of 3.90-hank roving, double, and the end breakage was 28 per thousand spindles per hour. Then he moved the speed up to start at 132 r.p.m. and finish at 145 r.p.m., and the end breakage was 52 per thousand spindles per hour—and, he said, at the higher speed some of the spindles would "ride up." He therefore went back to the lower speed.

Mr. Sorrells said that starting at 123 r.p.m., and finishing at 137 r.p.m., he found an increase of about three per cent in breaking strength over his regular work, the end breakage being about the same, 28 versus 31. "We ran some of this yarn onto four short beams for the looms and had about 20 per cent less loom stoppage than on the regular run," he said.

"On a six weeks run, measuring with hank clocks, we find that the long draft frame equipped with the variable speed motor turns off 80 hanks in a double-shift run of 110 hours per week, while the short draft frame with the usual motor turned off 66 hanks in the same period, showing an increase in production of 17 per cent."

At this point, E. A. Untersee, who has conducted experiments with the variable speed motor over a number of years, was asked to explain its characteristics. He said the motor used is a three-phase, shunt characteristic type. As the speed of the motor increases the horse-power increases. The motor speed is changed from the shifting of the brush yoke on the commutator, permitting a constant fixed speed at wherever the brushes are placed. The speed is changed by a mechanical control built into the motor and connected to the builder mechanism and traverse mechanism of the spinning frame. As the bobbin builds up the speed is changed according to the best methods of

spinning, Mr. Untersee said in his explanation.

In explaining the theory of varying the speed, Mr. Untersee pointed out that when a traveler is used of the right weight to hold the yarn balloon down when the bobbin is starting, as the size increases to the full bobbin the traveler is effectively heavier and there is a greater tension on the yarn. He said if it were possible to change the weight of the traveler during the spinning process it would be possible to retain a constant speed and the same tension, and that as this cannot be done, the speed is varied to reduce the effective weight of the traveler and the tension.

Furthermore, he said, on filling wind work there is a large and a small diameter, as the bobbin is filled up, and the angle of contact between the traveler and the bobbin is more acute at the small diameter than at the large diameter, and therefore, in order to relieve that tension the speed is slowed down for the smaller diameter. Then at the top of the bobbin, he continued, there is a serious tension between the guide wire and the front roll. Mr. Untersee said that at the center of the bobbin, there is practically no limit to the speed which can be put on, within reason.

He said that four years tests of the motor on cotton showed, conservatively, an improved breaking strength and an increased production, with no harmful effect upon the elasticity of the yarn, but rather an improvement. He added that no definite amount of increased production is claimed, on account of so many variables in different mills, but that on filling wind, from his experience, he believed that a ten per cent increase in production, with the variable speed, would be a reasonable minimum to expect.

Requires More Space.

In answer to a question from Mr. Jones, Mr. Untersee said their experiments in cotton mills had been only on long draft. R. J. Jennings asked with reference to Mr. Untersee's statement about the horsepower increasing, and the explanation was that while there was a certain amount of increase as the speed went up, the total horsepower consumption of a frame with a variable speed motor is no greater than that of a machine equipped with the regular type of motor.

"Can the variable speed motor be applied in the same space as the regular motor?" asked J. W. Hames.

Mr. Untersee replied that, if a direct coupling application is used, approximately three square feet more floor space is required for the variable speed motor than for the standard induction type motor. He added that the motor may be used in either the warp or filling wind.

In further explanation of the work of the motor, Mr. Sorrells added that, on warp wind, as the ring rail approaches the top it slows down until it makes the change and comes back, for about the distance of the build on filling wind, and then goes back to speed, and, from the builder motion, the speed of the motor increases as the bobbin fills.

There were a number of questions asked of Mr. Sorrells, but he was not in a position to answer with figures. Mr. Hames wanted to know at what part of the bobbin the greatest number of end breakages occurred. Oliver G. Murphy, superintendent, Shawmut Mill, Shawmut, Ala., asked where between the starting speed of 123 and 132 r.p.m. front roll, he had found the best operating conditions. He also wanted to know whether the break tests were made with the bobbin half, three-quarters or one-quarter full, etc. The fact that Mr. Sorrells' frame driven with the variable speed motor is likewise his experimental frame on long draft, would complicate the test situation, and it is felt that before the next carding-spinning meeting of the organization, further information and experience will be available.

Filling Wind for Warp

THE next question presented by Mr. Lehmann was with reference to the use of a filling wind build on warp yarn. While it is true that this question has been discussed time and again, it still was interesting and the reports made were naturally based upon an extended period of time, ranging from one to eight years. In submitting the question, Mr. Lehmann offered his own experience, at the Dixie Cotton Mills, which was reported by O. C. Bagley, overseer of spinning.

Mr. Bagley was not at the mill when the change was made from warp wind to filling wind, but had the

J. W. Hames, General Chairman

information available. He said that, to start with, "the diameter of the bobbin was changed from 7/8-inch to 3/4-inch, and a bobbin perfectly straight, except for a slight cone at the base, was adopted. The stroke of the traverse on warp wind was 6¾ inches, and this was changed to 1¾ inches on the filling wind.

"The record shows that they increased the speed of the front roll between 12 and 14 r.p.m., in changing to filling wind. On a series of tests it was shown that the breaking strength was about ten per cent better. The same traveler was used on the filling wind until the size of the bobbin was changed, and then the traveler was changed.

"The record showed 12 per cent less ends down with the filling wind, and an increase of 400 yards of yarn on the bobbin. However, the size of the ring was

changed, which, with the smaller bobbin, gave more space. We changed from a 1⅞-inch, No. 2 flange ring to a 1 13/16-inch, No. 1 flange. Our frames are 2¾-inch gauge, and by changing the size of the ring and the flange it helped us considerably on narrow gauge. The numbers range from 11s to 23s."

"Our frames being narrow gauge," added Mr. Lehmann, "at the time we were running warp wind we had trouble with the ends whipping against the separators and giving the yarn the appearance of hair on a dog's back, and when we put in the No. 1 flange ring we cut down on this materially."

"Did you change the twist?" asked C. K. Cobb, of Canton Cotton Mills.

"Not at that time," replied Mr. Lehmann, "but we did later, and we are now running 4.50 instead of 4.75. There is practically no difference except we get a little more on the front roll with the less twist."

Increased Spooler Speed.

The questionnaire also called for the effect of filling wind with regard to the spooling, as well as the type of tension used, and, continuing the report, Mr. Lehmann had Mr. Adams, his overseer of spooling, report on this, and the reply was that their experience had shown the weighted type of tension to be the best. Mr. Adams added that they increased the speed of their spoolers from 800 r.p.m. to 1,200 r.p.m. after going onto filling wind.

"We find that the spooler bobbin is just as firm as before," continued Mr. Lehmann. "We carried it on up to 1,400 r.p.m., but it affected the breaking strength slightly, while 1,200 r.p.m. does not."

The next report came from R. J. Jennings, of the Lanett Mill, West Point Mfg. Co. He said, "our frames are 3-inch and 3¼-inch gauge, and on warp wind we used a 2-inch ring, ⅞-inch bobbin, 7-inch traverse, and when we changed to filling wind we left the ring the same and decreased the size of the bobbin to ¾-inch, using 6½ and 7-inch traverse. The stroke on the filling wind is 1⅝-inch.

"We increased the speed on the front roll about 12 per cent by taking out twist and speeding up the whole frame. We use a straight bobbin; we tried the reverse taper and didn't like it, and the regular taper, and didn't like it, and went to a straight bobbin with a cone base.

"We have less ends down, and gain in yardage on the bobbin. We are on 14s and 17s, and on the 14s warp, on warp wind, we got 1,840 yards on a bobbin, 2-inch ring, 6½-inch traverse. On the 14s on filling wind we get 2,402 yards. On 17s, on warp wind, we got 2,700 yards, and on filling wind 3,000 yards on the bobbin." Mr. Jennings stated that they changed over to filling wind six or seven years ago.

The questionnaire had asked for the effect of filling wind upon the efficiency of warpers, but Mr. Jennings said they did not determine this. However, he said, "on the spoolers we increased the speed of the spoolers about ten per cent, and after trying dozens of different kinds of tensions to start with, we finally went onto the weighted tension. Our rail on spinning goes up fast and down slow." (Mr. Lehmann stated that his traverse also goes down slow.)

There was some discussion here between Messrs. Hames, Edwards and Lehmann as to whether it is possible, with the same bobbin and same ring, to get as much yarn on the bobbin with filling wind as with warp wind, and the consensus of opinion was that although an increase in yardage is usually secured with filling wind, it is a result of using the smaller bobbin, etc.; but that with the same conditions, it is impossible to get as much yarn on the bobbin with filling wind as with warp wind.

George S. Elliott asked if anyone had trouble, on filling wind, with the ends whipping against the separators and causing chafing of the yarn. Mr. Lehmann replied that his experience showed less chafing with the filling wind, and R. J. Jennings confirmed this. Mr. Lehmann said that one reason they changed to filling wind was to eliminate the whipping—on account of the appearance of the yarn. Mr. Elliott said microscopic examinations had proven that his yarn is being chafed on the filling wind, and that probably this is due to an excessive speed, which he intended to investigate.

Johnston McCorkle, of the Fulton Bag & Cotton Mills, Atlanta, asked if anyone using the weighted tension had difficulty with the yarn cutting the underside of the tension. "We haven't," replied Mr. Jennings, "but it may be because we haven't had the tensions long enough." He added, however, that they are doing away with the spoolers, replacing them with high speed winders.

Mr. Lehmann recalled that at the Tech meeting a year ago, a man had submitted a problem of that kind, and that at the time he had investigated his tensions, and found no difficulty of that kind.

Not Satisfactory on Colored Work.

Frank K. Petrea, superintendent, Swift Mfg. Co., Columbus, Ga., was asked for his experience on filling wind, replying that he runs a great deal of colored work, and he had found that the flyings from adjacent frames would accumulate on the bottom of the bobbins, and made the practice impracticable under those conditions, so he had reverted to warp wind.

Walter B. Dillard, Jr., assistant superintendent, Columbus Mfg. Co., Columbus, Ga., made the next report, saying that "we went onto filling wind about six years ago. The size of our ring is 1¾-inch. On the warp wind we used a ⅞-inch bobbin and changed this to ⅝-inch, straight bobbin with a cone base. The total traverse was not changed. The length of the stroke on filling wind is 1¾-inch. The traverse goes down slow and up fast.

"We were able to increase the front roll speed, but at the time we were making a number of other changes and so cannot attribute this entirely to the filling wind. There was no noticeable difference in the breaking strength of the yarn. We lightened the traveler one number, and we have less ends down in all, but about a third more ends down at the start-up, with filling wind. There is a gain in the total number of yards on the bobbins, using the same bobbin, on 25s warp, of 500 yards. We have found that the weighted tension devices are satisfactory under our conditions. On our tension devices we have experi-

	Mill No. 1 (a)	Mill No. 2	Mill No. 3	Mill No. 4	Mill No. 5	Mill No. 6	Mill No. 7	Mill No. 8 (b)	Mill No. 9	Mill No. 10
Yarn Number	33s	23s	44s	23s	12s	24s	13s	12s	13s	21s
Single or double roving	Double	Double	Double	Double	Single	Double	Single	Double	Single	Single
Size of ring	1 11/16"	2"	1 7/8"	2"	2"	1 13/16"	1 13/16"	2"	2"	2"
Speed of roll	108	131	110	138	154	118	168	135	136	122
Speed of spindle	9715	8900	9400	9108	7750	8165	8720	7230	8421	9310
Traveler	5/0	4	15/0	No. 1	No. 6	3/0	No. 8	-------	2 gr.	9 gr.
Draft	10.62	10	12.32	11.9	7.68	10.5	8.37	12	7.47	7.26
Twist per inch	28.50	21.6	26.83	4.53	15.34	23.8	16.22	16.44	18.64	23.61
Down during doffing	34	52	129	25	70	124	112	143	131	98
Singlings	2	1	4	-------	7	2	3	43	36	38
Doublings	3	-------	4	1	2	2	6	-------	12	2
Gouts in Roving	22	7	68	1	28	-------	-------	3	21	11
Flying Lint	19	4	19	4	7	8	-------	2	10	19
Other Gouts	4	7	17	-------	4	-------	-------	17	9	59
Hard Ends	9	11	42	3	16	-------	-------	-------	34	11
Caused by Hard Ends	7	9	-------	17	-------	4	-------	-------	-------	12
Broken Bands	5	4	4	4	10	14	9	-------	29	32
Choked Roll	4	1	1	2	-------	-------	1	9	5	9
Bad Roll	5	30	24	4	2	2	1	-------	39	25
Broken in Cleaning	-------	14	20	-------	6	10	26	-------	-------	22
Dry Spindle	-------	-------	-------	1	-------	-------	-------	-------	-------	3
Spindle Not Plumbed	2	5	24	-------	4	-------	-------	-------	-------	-------
Bobbin Loose	6	9	4	2	-------	42	12	4	40	18
Bad Ring	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
Traveler Broken	5	-------	2	-------	2	-------	-------	-------	10	30
Separator Blade	-------	-------	-------	-------	2	-------	1	-------	5	11
Roving Outside Roll	2	1	-------	-------	-------	-------	-------	-------	-------	3
Roving Out	3	13	21	11	22	14	7	18	-------	-------
Roving Broken	5	15	15	6	6	26	7	11	-------	19
Lint in Trumpets	4	10	2	9	2	4	12	2	-------	5
Dry Top Roll	4	-------	-------	-------	-------	-------	-------	-------	-------	-------
Blowing off	-------	2	-------	-------	-------	-------	-------	-------	-------	-------
Crooked Spindle	-------	-------	3	-------	-------	-------	-------	-------	-------	-------
Bad Bobbin	-------	-------	7	-------	-------	-------	-------	-------	-------	-------
Cotton in Traveler	-------	-------	7	9	-------	10	9	-------	-------	-------
Thread Guides Out	-------	-------	1	-------	-------	-------	-------	-------	-------	-------
Laps on Middle Roll	-------	-------	3	-------	-------	-------	-------	-------	-------	-------
Clearer Waste	-------	-------	-------	2	-------	-------	-------	-------	-------	-------
Unknown Causes	118	44	201	104	64	132	247	309	4	3
TOTAL (including ends down at doffing)	263	239	622	205	254	394	448	561	385	430
TOTAL (less ends down at doffing)	229	52	493	180	184	270	112	418	254	332
Ends Down Per Thousand Spindles Per Hour (not including ends down at doffing)	45	18.7	49.3	50.93	20.17	27	33.6	25	25.4	33.2

(a) Five hour test. (b) Test on 1632 spindles.

Compilation of Most of the End Breakage Test Reports Submitted at Georgia Tech Meeting on March 19th.

enced the trouble of the yarn cutting the tension, and have overcome this by putting in a little piece of flat metal on the surface where the groove is worn.

"We were able to spool the yarn faster, and, while the efficiency of the warpers was not materially increased by the filling wind, we did assist it by the installation of yardage counters and positive expansion combs."

In connection with speeding up the spoolers, J. C. Edwards said that "my experience is that if you are to get the same operative efficiency, you must speed up the spooler hand as well as the spooler."

"Our spooler hands can spool more on the filling wind than on the warp," said Mr. Lehmann.

George S. Elliott reported that, "we found, not only at our own mill but at others we had the pleasure of visiting, that the greatest advantage we could see in filling wind was due to the uniformity of the bobbin and supply of the yarn. It wasn't so much a gain as to the amount of yarn you could get on the same bobbin, but a question of the supply of yarn for the spooler room. We find that, to the best of our testing, we can maintain about 20 to 25 per cent increased yardage, simply because the doffers will doff warp wind at 5/8, 3/4 and 7/8 full, while the tendency to do that is not so great on filling wind; if there is an inch left at the top on filling wind they will let it fill up.

"As to speed, as I said, we increased this, but opposite to the other gentleman's report, we were using a 2/0 traveler on 21s, 2-inch ring, and we put on a No. 3 traveler, which is an increase of about five numbers in weight, in order to hold the yarn down. We

changed our bobbin to a straight cone base style, probably ¾-inch longer."

"After all, the thing that tells the story is the results," said Mr. Lehmann, "and our results have been very pleasant, on filling wind."

Here Mr. Elliott said in reply to Mr. Hames that he had tried a straight bobbin with no cone, and there had been no difference in his chafing.

At this point A. B. Peterson questioned Mr. Hames, who at present has one mill on filling wind and one mill on warp wind. The latter mill has been changed back from filling wind to accommodate a new type of spooler which requires warp wind. Mr. Hames reported in answer to questions that he saw no difference in the breaking strength or end breakage in changing back to warp wind, making no other change in his conditions. However, he had no figures comparable in the same mill with previous warp wind conditions, as the mill went on filling wind several years ago. Mr. Hames said further that he did not get quite as much yarn on the bobbin with the filling wind as with the warp, and J. S. Gammon, overseer of spinning, confirmed this by saying the doff runs a little longer on the warp wind.

Another man asked if Mr. Hames had any increase in thread waste in changing back to warp wind, caused by tanglings. Mr. Hames replied that while he had not noticed this, due to putting in the new spoolers, there probably would be under ordinary conditions.

End Breakage Tests on Spinning.

Chairman Lehmann next asked for reports of tests on end breakage per thousand spindles per hour, with causes, which had been assigned to several members. The form used in making the test was furnished each member, so as to make the tests comparable. The results of the tests as reported at the meeting, covering a range of numbers and different conditions, will be found in the table which accompanies this report, on page 621. There was no discussion of these reports, as they were submitted as a matter of actual experience, and are reproduced here for further study and analysis.

Using Bobbin-Cleaning Machines.

The final question of the morning session was with reference to methods of removing waste from roving bobbins taken from spinning frame creels, and Mr. Lehmann asked for experiences in using the bobbin-cleaning machine which pulls off the roving. J. C. Edwards replied that, "I think it is worthwhile on medium and fine hank rovings, say from 1.50-hank up." J. A. Sorrells reported excellent results with the machine he is using, stating that it saves the "whittling" of bobbins in removing the roving with a knife. He said in addition to that, he saved in the amount of cotton left on the bobbins in creeling, and figured that the machine gave him a saving of about 40 per cent in waste from this source.

"Our experience has been that we save one cent a hank, and can give the spinners more sides," reported Mr. Lehmann. He said at first there was a considerable decrease in the amount of stock left on the bobbins, and then later the help began taking it out a little quicker, until it was necessary to "have a conference" about it. Mr. Lehmann, Mr. Jones, and W. J. Simpson, of LaFayette Cotton Mills, all declared that they didn't have any cut roving anyway, by enforcing the rule that it be twisted off, and that the saving comes in the amount of the waste. Mr. Simpson said that "we haven't had the machine in long enough to tell the results, but we do not have any cut bobbins anyway. We use the slick top bobbin and the spinners really do twist it off. We do not figure we are saving on bobbins, but we do on the waste." This discussion concluded the morning session and the discussion of spinning subjects. The luncheon was held in the new dining room of the school, with musical entertainment by an orchestra of Tech boys. At the meeting, Albert Lehmann, Jr., who was named last September to fill the unexpired term of Frank E. Heymer on the executive committee, was re-elected for a term of 2½ years, Mr. Heymer's term expiring with this meeting. This was the only feature of business transacted at the meeting.

Discussion of Beaters

THE afternoon session was given over to a discussion of carding subjects, most of which had been assigned to different members. The session was conducted by George S. Elliott, superintendent, Pacolet Manufacturing Co., New Holland, Ga., in the absence of E. H. Rogers, agent, Fulton Bag & Cotton Mills, Atlanta. The first question asked for reports on experience with Buckley, blade, and Kirschner beaters, with regard to the amount of motes taken out, the appearance and evenness of the laps made, and the breaking strength of yarn.

Walter B. Dillard, Jr., assistant superintendent, Columbus Mfg. Co., Columbus, Ga., made the first report. In giving his lay-out, Mr. Dillard said they are using a 40-inch Buckley in two lines of equipment, with a 30-inch type in the breaker, followed by a two-blade beater (two section breaker), and a Kirschner beater in the finisher. "Our reason for selecting the Kirschner beater for the finisher," he said, "is that the carding effect prepares the stock better for the card and leaves less heavy duty for the licker-in. While we are not ready to throw out our 30-inch Buckleys, we do believe that the comparative results secured on the Buckley beater have been over-estimated. We are throwing out too much white cotton with them." Mr. Dillard gave his percentage of motes thrown out as follows: Buckley, .21 per cent; blade, .33 per cent; Kirschner, .2 per cent. He had no record of breaking strength tests on yarn, comparing the different types of beaters.

In answer to J. C. Edwards, Mr. Dillard said his total waste for the pickers was a little less than one per cent.

"From a cleaning standpoint," he continued in answer to the chairman, "the Buckley has an advantage in that it loosens the cotton to get better cleaning qualities from the stock." J. E. Batson, overseer of carding at Columbus, said in answer to G. S. Jones that they had made no changes in the beater or grid

(*Continued on page* 721.)

Oil Spraying, *Straight* Wire Card Clothing, Beaters, *and* Doffer Speeds Discussed *at* Augusta Meeting

J. O. Corn, superintendent, Pacific Mills, Columbia, S. C., Who Conducted the Discussion as Chairman of the Division.

IN spite of a small attendance, occasioned by extreme weather conditions, there was a valuable discussion at the meeting of the Carding Division of the Southern Textile Association, in Augusta, Ga., on Friday, March 15th. The meeting was held in the Hotel Richmond, and J. O. Corn, chairman of the division, was in charge. Joseph C. Cobb, secretary of the Association, assisted, making it a Corn-Cobb affair (a terrible pun!)

The chief interest centered in a discussion concerning the new straight-wire clothing for cards, which evidently requires less stripping and grinding. Several members reported experiences with this equipment; and an imported clothing wire, requiring less stripping or cleaning and no grinding, was also discussed. In addition, there were many other subjects pertaining to card room practice discussed fully, and a detailed report of the complete discussion will be found in the paragraphs which follow:

One-Process Picking Reports.

THE practical discussion was started by Mr. Corn with a question concerning picking. He asked for experiences with the new one-process method of picking, as well as any other changes of a major character which any men had made in their processes. No one present had installed this method, but T. N. Crocker, overseer of carding, Mollohon Mill, Newberry, S. C., told of a visit to a mill with the system in operation. "This mill," he said, "threw out three processes and installed the single-unit machine. They formerly had one section man and seven picker men on the three processes, and when I was there they were using one picker man and a section man on the day run, and only one man at night, for five units.

"The overseer was away, but the second hand unrolled one lap and weighed 47 individual yards. I didn't see all of the 47, but I did see 23 of them weighed, and there wasn't enough difference in the weight of the laps to move the hand on the scales more than ⅛ to ¼-ounce. He said he did that once a week and found practically the same uniformity all of the time—except one time when an opener had choked up and the cotton had run out, which caused it to vary more—but unless they have some trouble with the bale breaker that they had practically no variation. He told me that the week previous he had set back only nine laps on the day run. He said they liked it fine, and it is one of the finest things that ever happened to a mill, and they couldn't do without it." He added that the mill is on 30s to 40s, and that formerly they had seven breakers, nine intermediates and eleven finishers, which were replaced with five units of the one-process picking. In addition, he said, where they had been over-crowded, they had now an over-plus of machines which permitted them to keep one line stopped for cleaning all the time and still keep up.

"If he was getting his yard-by-yard weight within ⅛-ounce, I'd say he is beating what most of us are doing," observed Mr. Corn.

"I know of one mill where they have run 200 laps and weighed them up and the largest variation was .85-ounce," reported P. W. Ellis, superintendent, Seminole Mills, Clearwater, S. C.

David Clark here told of visiting a mill in Fall River equipped with one-process picking, where they had replaced 11 finishers with three units. "They told me they had been using five men and now have two, and they claim to have much less variation in the weight per yard. They had a system of running the laps over a rack in front of a window for inspecting, and this showed them up to be very even."

Mr. Crocker said the plant he visited uses this method, and the laps he saw seemed to be perfectly uniform.

G. S. Jones, overseer of carding, Sibley Mfg. Co., Augusta, Ga., said he had inspected the one-process picking at the Langley Mills, Langley, S. C., and was told that the machines enabled them to cut out about 75 per cent of the laber in the picker room; and that they have considerably less trouble with their numbers. Mr. Corn asked about the cleaning done by the machines.

"I noticed the cleanings under each beater, and they looked all right," said Mr. Jones. "I have made experiments on various beaters and settings, and these droppings looked as good as any I had ever seen. The

motes were fairly clean and the quantity seemed to be all right, and they made a very nice lap for the cards. One thing that impressed me was that the hands do not touch the cotton from the time it is put on the apron until it is in a lap ready for the card; and when the machine knocks off, the whole machine stops. One man looks after five units."

"I do not think the one-process has anything to do with the cleaning," said Mr. Clark, explaining that the same principles of cleaning used in it could be adapted to the regular two or three process method. Mr. Ellis explained that in this installation a 30-inch Buckley and Kirschner are used, and that "in talking with the builders of the machine they tell me that the 30-inch Buckley type is the proper diameter for that type of beater; if any larger you create too much draft, and if it is smaller you do not get enough." He asked at this point for discussion as to the use of the Kirschner versus the blade beater for use in finishers.

Setting Kirschner Beaters Properly.

Mr. Jones said he uses two processes of picking, with a blade beater in the breaker and a Kirschner beater in the finisher. Mr. Ellis pointed out that he understood the blade beater was being recommended in the one-process picking, and Mr. Jones said that the superintendent at Langley had tried both, and rather favors the two-blade type in the one-process.

T. N. Crocker reported the use of a Kirschner beater in the finisher picker. David Clark declared that the difficulty with most men and the Kirschner is that they do not know how to set them—that most men do not set them close enough; he said they should be set so close that the pins just miss the bars. As to the Buckley beater, he said he had used this type 30 years ago in A. T. Atherton pickers, pointing out that the machinery builders are just coming back to it, and said the 30-inch diameter is all right.

Mr. Corn asked here for discussion as to the use of the spiked type of beater in the finisher, but no one present apparently had experimented along this line.

With reference to the setting of the Kirschner beater, G. N. Bayne, overseer of carding, American Spinning Co., Greenville, S. C., reported that he sets his as close as possible without striking the rolls—to 1/8-inch. Mr. Ellis said he sets them to a 34/1000 card gauge, which was generally conceded to be pretty close. W. R. Connely, overseer of carding and spinning, Pacific Mills, Columbia, S. C., reported a setting of 1/16-inch, Mr. Corn explaining that they use a binder spring off of a loom to determine this setting. "All my life I have believed in setting carding beaters as close as possible," declared Mr. Crocker, but said that recently it had been suggested at his plant that the setting be opened to 1/8-inch and that he had done this. Mr. Bayne said when he was on local 7/8-inch cotton he set as close as possible; on 1-inch Western cotton, to 1/8-inch.

Depends on Staple of Cotton.

"It seems to me that the staple of cotton being run would have a great deal to do with it," said John Klinck, superintendent, Sibley Mfg. Co., Augusta. "Some time ago I set a Kirschner beater close up on 1 1/8-inch cotton, and it damaged the staple." Mr. Clark here observed that a comber is set close on long staple, and compared the action of the Kirschner to that of the comber.

Here Mr. Corn asked for reports on any other changes on pickers. E. G. Waits, overseer of carding, Newberry Cotton Mills, Newberry, S. C., said that he had increased production by putting hank clocks on his finisher pickers. "We were short of pickers," he explained, "and we had some old pickers that were not doing as good work as the others, and I put hank clocks on the ones that were doing good work, and that increased the production so that we could throw out the old machines and kept up just as well without them." He does not pay by the clocks, however, and Mr. Corn observed that it was simply a question of increasing the efficiency of the operatives, which might have been in some other ways, also.

At Pacific, Mr. Connely reported, with two breakers, and one opener downstairs, they had trouble in changing from damp to dry weather in keeping the same amount of cotton in the breaker hoppers. They put on a knock-off motion next to the doors over the hoppers, and as soon as both doors open and let the cotton back up, it cuts the feed off on the openers. Then as soon as the first door opens to feed the opener starts up. He said this gives them a lot better breaker lap, keeping the same amount of cotton in the hopper all the time. Mr. Corn added that it works mighty well, taking care of the overflow, the only overflow being that which is in the pipe when it cuts off.

The chairman called upon W. A. Black, superintendent of the Beaumont Mfg. Co., Spartanburg, S. C., for a statement, and he said, "my experience has been that you must set the beaters according to the staple and the weight of the lap. You can certainly set a beater closer on a light lap than you can on a heavier lap. I should say that 34/1000-inch would be pretty close on 1 1/8-inch cotton."

Waste Percentage on Pickers.

Mr. Corn next presented the second question, which asked for the percentage of waste or foreign matter taken out at each beater. On Middling cotton, Mr. Waits made the following report:

"I have a cylinder beater handling 3,800 pounds of 7/8-inch cotton a day, and we get about .2 per cent out from under that beater. On the blade beater on the intermediate, we get .5 per cent; and on the carding beater in the finisher, making a 15-ounce lap, we get .25 per cent."

C. C. Roberts, overseer of carding, Watts Mill,

IT was unofficially announced at the Augusta meeting of carders that the Spinning Division of the Southern Textile Association will meet in Charlotte, N. C., probably about the middle of April. It has been later announced the meeting will be held April 12th. This will complete the first series of group manufacturing discussions of the Association for 1929. To follow are the finishers and master mechanics, at dates and places to be announced.

Laurens, S. C., reported that "on a 24-inch Buckley, making 650 r.pm., carding 4,248 pounds in ten hours, we get 30 pounds of droppings, or .701 per cent; on a 16-inch two-blade beater in the intermediate, running 800 r.p.m., and handling 2,288 pounds, with 36 beats per inch, we get .434 per cent; and on the 16-inch three-blade Kirschner beater in the finisher, running 800 r.p.m., and handling 2,258 pounds with 38 beats per inch, we get six pounds, or .265 per cent. This is on Strict Low Middling cotton, 1⅛-inch to 1 3/16-inch staple."

Waste from Local and Western Cotton.

"How much difference is there in the percentage of waste from low-grade Western cotton and that from local low-grade cotton?" was the next question.

Mr. Bayne reported, on a ten-week test, on Strict Low Middling western cotton, 11 per cent up through

JOSEPH C. COBB, secretary and treasurer of the Southern Textile Association, and of The Arkwrights, Inc., who assisted Mr. Corn in the conduct of the meeting at Augusta.

and including the cards. Mr. Crocker said he had run a two-week test on local cotton, and the total ran between 10 and 11 per cent, with 1.14 per cent of it in the pickers, explaining that they have a very elaborate system of opening and cleaning. "My previous experience on local and Western cotton," he continued, "is that, with the same grade, on the Western cotton we got a larger percentage of foreign matter, dirt, trash, etc., but with the local cotton we got a larger percentage of fly and what I call fluff. The Western cotton seemed to be of a more uniform staple."

Chairman Corn here read two waste reports submitted by S. T. Buchanan, superintendent, Piedmont Mfg. Co., Piedmont, S. C. The first test showed the different percentages of waste taken out with different types of beaters and cleaning equipment. The first lay-out, giving the type of beater and the percentage taken out, was: Upstroke, 1.39 per cent; vertical, .26 per cent; Centrif-Air machine, .83 per cent; total 2.48 per cent.

Test No. 2: Upstroke, 1.19 per cent; vertical, .237 per cent; Centrif-Air machine, .606 per cent; total, 2.033 per cent.

Test No. 3: Upstroke, 1.133 per cent; vertical, .274 per cent; Centrif-Air machine, .565 per cent; total, 1.972 per cent.

Test No. 4: Upstroke, 2.55 per cent; second upstroke, 1.53 per cent; Centrif-Air machine, .82 per cent; total, 4.90 per cent. The sweeps totaled .14 per cent. The total cotton used was 136,370.5 pounds, and the total waste was 4,022.5 pounds, giving an average per cent of waste of 2.949 per cent.

Mr. Corn commented upon the fact that by the use of two upstroke cleaners, Mr. Buchanan had increased, in Test No. 4, the total amount of waste considerably. Mr. Buchanan explained that the cotton in this test was of low grade.

Buckley Beaters Versus Blade Beaters.

The chairman also read at this time the report of Mr. Buchanan from Piedmont comparing the Buckley and blade beater, and the compilation of figures showing the results of this test from the lap through to the finished yarn. The figures were:

	Buckley Beater	Blade Beater
Weight of laps used on card	1,235.75 lbs.	1,220.5 lbs.
Weight of waste on cards (Top flat strips, flys, and strippings)	52 lbs.	50.75 lbs.
Percentage of waste on cards	4.207%	4.158%
Average Weight of Card Sliver	64.4 grs.	63.2 grs.
Average Weight of 1st Drawing Sliver	66.6 grs.	65.4 grs.
Average Weight of 2nd Drawing Sliver	66.3 grs.	65.7 grs.
Average Weight of Slubber Roving	188.15 grs.	188.0 grs.
Average Hank Slubber Roving	.5314 hk.	.5319 hk
Average Weight of Fine Frame Roving	54.25 grs.	52.6 grs.
Average Hank Fine Frame Roving	1.843 hk.	1.901 hk
Average Number of Yarn (Spinning)	13.058s	13.47s
Average Break in Pounds of Yarn	131.66 lbs.	125.56 lbs.

Commenting upon this, Mr. Corn pointed out that it showed a small increase in waste on the Buckley right straight through, with a slight gain in the number in spinning, and six pounds better breaking strength.

Oiling Raw Stock

"ARE there any advantages in oiling raw stock?" was the next question, referring to the practice of applying a small percentage of oil to the cotton before it goes to the pickers. This developed a most interesting discussion.

"The only advantage that I have found is that on low-grade cotton it keeps down a lot of dust and short lint and fly," said E. G. Waits. "As far as any improvement in the running of the work is concerned, I have not been able to find it. But I have found that putting on one per cent will load up the cards and cause bad carding."

"That's one-half per cent too much," said S. T. Buchanan, of Piedmont. "I don't know anything about it except what I saw at the show in Greenville, but they tell me that one-half of one per cent will do it good, but one per cent will do it harm." The chairman called upon J. W. Hames, superintendent, Exposition Cotton Mills, Atlanta, Ga., for his experience.

"I use oil on low-grade stock in connection with strips," said Mr. Hames. "We use in one product about 50 per cent strips, and we find that it helps the working of the stock considerably. We use about one half of one per cent. It keeps down the dust considerably, and makes the work card better; the fibers seem to be more parallel."

David Clark at this point brought out that in his opinion those mills which had abandoned the practice did so because they tried to use one per cent, which is too much. He said that one-half to five-eighths of one per cent is the correct amount. "Most of the successful mills today are using it," he said. "I use it in two mills, and wouldn't be without it. I was recently in a high-grade sheeting mill, and told them I understood they had thrown it out, but they told me they

had been using it for about four years, and said it helps them, cuts down their waste."

Improved Method of Applying Oil.

Mr. Ellis asked about the method of applying the oil; whether it is now being done with the high-pressure nozzle system. Mr. Clark explained that at first the system of applying the oil was crude, but that has been done away with and the more modern method is being applied—that of spraying the oil on the cotton in the conveyor pipe. Mr. Ellis continued, saying that several years ago he had tried it, going from one per cent to one-fourth of one per cent, but that it made the yarn awfully neppy. "Since then, however, they have been back," he said, "trying to get us to try it with the high pressure nozzle method."

Inquiries at this point brought out that Mr. Hames and Mr. Clark use a mineral oil product, and Mr. Jordan, of Iva, S. C., said he had used a cotton-seed or vegetable oil. "Personally, I like it in the card room," he said, "because it kept down the dust, but every time we put it on the spinner hollered. We used one half of one per cent."

Mr. Ellis asked whether anyone had experimented with ageing the cotton after oiling, in order to allow the cotton to absorb the oil.

"I understand they recommend putting it in where the cotton goes through the pipe," said Mr. Buchanan, "and it looks to me like that is the only way to put it on successfully, but it does seem that there is such a little amount of oil and so much cotton that all of the cotton wouldn't get oil on it, so it might be a good idea to age it."

Ageing After Oiling.

Mr. Jordan told of a previous experience, in using cotton seed oil and ageing the cotton, and said that it apparently did no good, but explained that the stock varied greatly in staple, and contained card strips, comber noils, etc., and he doubted if anyone or anything could have helped the running of it.

Mr. Ellis explained the experience which had suggested the ageing idea to him. He said in his previous experience, in applying the oil in the hopper, he noted that the sides of the hopper stayed greasy with oil and that the cotton sticking there seemed to take up more of the oil. He said they applied some blacking to the sides of the hopper in order to trace it, and were surprised to learn that that cotton did not mix into the bulk, but apparently the black edges went straight through on the sides, and that it occurred to him that ageing or some other method to blend the cotton, with that method of application, might be helpful.

Someone asked if the oil was soluble in water, and Mr. Hames replied affirmatively with regard to the oil he is using. He said he tests every barrel which comes, for solubility, but explained that he does not dilute the oil—that it comes ready for application to the fiber.

"I think the greatest trouble has been in the crude way of applying the oil," continued Mr. Hames. "We first started out with a very crude way of applying it, but now I have put in the system of applying it in the conveyor pipe, and we are getting much better results."

Mr. Clark wanted to know why it was said to work better on strips than on regular cotton. Mr. Crocker explained that there were naturally more flyings in the strips, but Mr. Clark pointed out that everyone knows that the fibers which have passed through the pickers and cards have been straightened out somewhat.

"I do not think it would make any difference," said Mr. Hames, "but I have not gone that far with it. We think we have more or less dead stock in the strips and low-grade cotton, and by putting the oil in we get better results. I think I will go ahead with it later on my regular work."

What Started Use of Oil?

Chairman Corn asked what started the use of the oil. Mr. Clark replied that it had been used on wool for years; Mr. Crocker explaining that wool has naturally a high content of oil or grease which is removed in the scouring process, and that wool oil is applied to restore a part of this. "I was under the impression that oil started when most colored work was dyed in the raw stock," declared Mr. Corn, "and that on account of the brittleness of it they started oiling it."

"The first I heard of it was several years ago when we had a lot of low-grade cotton, and we wanted something to lay the fly and dust," said Mr. Ellis.

"Then it is principally to eliminate the dust?" inquired Mr. Corn.

"No," replied Mr. Ellis. "You will have to lighten upon the numbers because you keep into the yarn some of the stock that you would lose."

"It reduces the waste," said Mr. Clark. "It is nice that it reduces the fly and makes the room cleaner, but its main object is to reduce the waste. There are less strips, less clearer waste, etc., and you get more pounds of goods out of the same amount of cotton."

Joseph C. Cobb explained here that The Arkwrights, Inc., had just assigned a test covering the use of oil in a carded and a combed yarn mill, and that the figures would soon be available.

Mr. Jones wanted to know if he understood correctly the statement that the oil holds clearer waste on drawing and roving frames in the stock.

"That is my understanding," said Mr. Corn.

"Then that goes on into the yarn?" asked Mr. Jones.

"I suppose so," said the chairman, and Mr. Clark explained that "everyone knows that in clearer waste there is a lot of long fiber." Mr. Ellis added that it was claimed that there is enough regain to pay for the cost of the oil.

"Mr. Fennill of Rock Hill is using it," said Mr. Jordan, "and said he couldn't get along without it. He said he wouldn't be able to hold the help in the card room without it, on account of dust and lint, using low grade cotton on blue denims."

Joe Lanier, production manager, Shawmut Mill, Shawmut, Ala., asked if the use of oil would affect the breaking strength. Messrs. Ellis, Hames and Clark

replied that they had been able to note no difference in the break.

S. L. Crolley, superintendent, Hermitage Cotton Mills, Camden, S. C., asked Mr. Hames if he used one-half of one per cent of the weight of the stock, in oil, and ran back 50 per cent strips, how he regulated the amount of oil to provide for the oil already on the strips. Mr. Hames replied that he does not at present run back any strips from the oiled work, taking his strips from the regular run of white cotton; but added that if such were the case, there might be necessary some adjustment in the amount of oil applied.

Different Numbers of Card Clothing.

The next question from Chairman Corn was, "What kind of cotton and what class of goods are the following cylinder clothings fitted for: 90s, 100s, 110s?"

Taking up first the 90s wire, Mr. Crocker expressed the opinion that it is all right for 14s, 15s and 16s. Mr. Waits is using it on 8s to 18s. He said they have some 100s, doing 190 pounds in ten hours, and that he does not notice any difference in the work of the 90s and 100s, except that the finer point wire seems to need stripping a little oftener.

Mr. Buchanan said he had been using 90s on 8s to 13s, and later put in 100s on 13s to 20s, and that now he has concentrated on 100s for 8s to 25s, and gets satisfactory results. W. A. Black said he uses 90s on 6s to 18s, but that "I think we have run some 30s and 40s on it, and have not been able to tell any difference in the breaking strength of the product."

David Clark reported that recently he had heard a deep-thinking superintendent express the opinion that "I have come to the conclusion that we have been drawing on our imagination; I believe there never was any reason for using more than a 90s wire on any work."

Before the war, Mr. Bayne said, the American Spinning Company was on 6s to 24s, and during the war were on 30s, and that now they run around 20s, and use 100s wire.

Joseph Cobb explained the man who asked the question makes 50s to 80s, and wanted to find out the proper wire for those numbers. Mr. Roberts, of Watts Mill, Laurens, S. C., reported the use of 110s and 120s on 40s to 85s. "In the last two years we have put some on 120s and 130s, and I think there are fewer neps in that card sliver," he added.

Mr. Crocker reported an experience with a company operating a print cloth mill and building a new mill on lawns, making 57s warp and 82s filling. He said in building the mill the 90s and 100s clothing in the print mill was duplicated in the lawn mill, but the product appeared full of neps. When a bursted water pipe wet some of the cards, they changed to 110s and 120s wire in the lawn mill, which improved the work considerably. "I am satisfied that the more points per inch, just so you won't get it too crowded, the less neps you will have," he said. "On 30s and 40s I like 100s on the cylinder and 110s on the doffer. When you get above 50s you would want not less than 110s and 120s."

"We are making 12s," said Mr. Klinck, "from 8s to 20s and more 8s than 20s, and we originally had 100s cylinder and 110s doffer wire. Some five years ago we decided to use a heavier wire, and since we have been using 90s and 100s. We have a good many cards on each, and if there is any difference between them we cannot see it."

"On the same number of yarn, if you card fast and heavy, you need a coarser wire than if you carded slow and light, making the same thing," commented a member.

Straight Wire Clothing for Cards

AT this point the chairman turned the meeting into an open discussion of new types of card clothing wire—described as having a straight wire fillet, and not requiring grinding nor stripping. S. T. Buchanan, superintendent, Piedmont Mfg. Co., was the first to report, saying that "I put one in and we have been running it for about three weeks, and my carder tells me that he can't tell any difference. It has not been stripped yet."

G. S. Jones, overseer of carding, Sibley Mfg. Co., Augusta, Ga., was the next to discuss the subject. He said, "We have two cards with the straight wire clothing, and have been running them for about three months, and have made various tests on them. As far as the waste is concerned, I cannot tell any difference from the regular wire; as far as not stripping is concerned, that is a mistake. The first card I ran 35 days and ground it. I card 18 pounds per hour. I took a brush and went there the 34th day and couldn't get the end up. And when I stripped the card, you should have seen it. If I'd had my whole room on it there wouldn't have been anybody in there, there was so much dirt and dust around it. I ran tests for one day, two days, three days, and so on, and one week, two weeks, and so on, and at the end of the 35 days, I was getting a fairly good sliver, but I wouldn't say it was as clean as the other cards were producing, and the end would not stay up because of the dirt, that starts in the bottom and fills up until it finally gets to the surface." Mr. Jones said it might be run five or six days without stripping and produce a good sliver, but a whole room of them would "make a mess" at stripping time. At the end of a week, he said, the sliver is fairly good. He is on local Middling 7/8-inch cotton. He explained that he does not strip the cards, but "cleans them out."

In answer to a question from Mr. Hames, Mr. Jones said that the quality of the flat strippings with this type of wire on the cylinder was lower.

Reduced Flat Speed 50 Per Cent.

Mr. Jones continued by explaining that the manufacturers of the wire he used recommended reducing the speed of the flats by 50 per cent, and that he tried it and made several tests for breaking strength, which he found weaker. Then he went back to the regular flat speed and brought the strength back up.

John Klinck, superintendent of Mr. Jones' mill, reported on a sample of 200 yards of cloth made out of yarn from the sliver from the cards with the straight wire. He said there was no apparent difference in

the cleanliness of this cloth and cloth from regularly-equipped cards, except the cloth from the straight wire clothing seemed to have less neps in it. Mr. Jones added that the cloth was made from sliver produced on cards with the flats running at the regular speed; that he would not be willing for any cloth to be made from the sliver produced by the cards when the flat speed was cut in half. He also stated that when the sliver which went into the cloth was made, the cards had been running two weeks without stripping, and that the card had not been "cleaned out" in order to make the test.

At this point, at Mr. Klinck's request, Mr. Jones told of his experience with a hard point knee wire. He said he had run this for 12 months and two days without grinding it; having ground it, as usual, before putting it on. Carding 18 pounds an hour, he let it go for a year without grinding, and at the end of that time, he said, while it was not as sharp as it should have been, "there was a fair edge" on it. He said it is now running, not having been ground again in six months.

Stripped in Seven Weeks.

Mr. Bayne of the American Spinning Company, at this point related his experience with the straight wire clothing. He said he had seven cards equipped, the first since last September. On some of the cards he cards 116 pounds a day of ten hours, and on others 145 pounds. But, "in speaking of a strip-less and grind-less card, if there is such an animal I have never seen one." He said he had run his card seven weeks without stripping or grinding. He said after seven weeks without stripping the web, while it didn't look as good as the others, was pretty good. "What I was after was to see how far I could go with it, and at the end of seven weeks I decided that was enough.

Grinds Two and Three Times a Year.

"From my experience, as far as I can see, it is going to require grinding every four to six months. We have adopted a system, however, of cleaning these cards and re-setting them just as if we were grinding, every thirty days; instead of grinding we strip them out, clean them, and re-set them—and if they need it, grind them. You know a card won't stay where you set it, anyhow.

"As to waste, we show a saving of about one-third; the way we get this is by slowing up the flats." He added that they reduced their flat speed 40-odd per cent. "As I said, we have seven of these cards running, and have two more that we are going to put in. It looks like we will put them on as fast as we need them. It looks to me like it is here to stay. There is one thing, though, that we must determine, and that is how long they will last. Of course in a year's time you can't tell, but I will say from my experience from last September to now, if there is any defect about it I haven't found it."

Summing up what Mr. Bayne had said, Mr. Corn said, "As I understand it, your practice is to strip every thirty days, and you recommend grinding every four months."

Mr. Bayne continued saying that, contrary to Mr. Jones' experience, he had an increase of four pounds in breaking strength, but later explained this was probably due to a change onto better cotton.

"How close do you set the flats with this clothing?" asked Mr. Ellis. Mr. Bayne replied that he uses the same settings as with the other clothing—starting with a 10 at the back and going through to a "slack 7" on the front. Both Mr. Bayne and Mr. Jones explained that it was possible to set the straight wire "jam up," whereas on the regular clothing this would result in faced wire.

Mr. Ellis pointed out that in his opinion, from what had been said, the clothing should be a labor-saver, especially in a mill which previously found it necessary to do frequent grinding and stripping, by eliminating most of this work.

Less White Stock in Flat Strips.

E. G. Waits, of the Newberry Cotton Mills, Newberry, S. C., next reported on the clothing. He said he cards 19 pounds per hour, and has had four cards equipped with the wire on a seven-week test. "We find a few things we think a great deal of," he said. "One thing is that if we can grind the flats and doffer monthly we can do it with the stock in the card, and we figured it out on the basis of 200 cards which would mean an increase of 16 cards' production in that size mill, and that is something to think about. Then we figured that where we have been using four or five strippers that we would probably get along with two strippers on half-time, stripping the doffers about once a week and the cylinders about every 24 days. We carded 4,105 pounds without stripping, on a four-weeks run.

"It should be possible to get nearer 100 per cent production from the card, with the exception of the time stopped for setting them. Another thing: we think we are saving a little bit of good cotton. Most of us agree that with the regular wire about 50 per cent of our cylinder strips are good cotton, and we think we are saving that; about 1½ pounds a day. We have reduced the speed of the flats.

"We have made some tests, side by side, and we find that one of the things we think is we get about 50 per cent less variation in the card sliver, slubber, and speeder roving, and yarn." He explained this by the elimination of the excessive variation formerly experienced before and after stripping. He said, with reference to breaking strength that it is practically the same, with no variation from previous results. He makes 14s yarns.

As to the frequency of stripping, he answered a question from Mr. Corn by saying that on the work he is doing, he should strip about every four weeks, but that on finer work it didn't seem necessary to strip as often.

Metallic Clothing Discussed.

"Has anyone had experience with an imported wire for cards?" the chairman asked next, explaining that this was different from the types which had been under discussion.

Upon request that he describe it, Francis L. Hill,

? TWO PERTINENT QUESTIONS ?
Can *YOU* Answer Them

1. Why are Americans importing from France sheer cotton fabrics and laces made of our exported

ARIZONA PIMA COTTON

2. Why are many American manufacturers importing inferior staple Egyptian Sakel, when they can supply the popular demand for Parisian quality, by using this same

ARIZONA PIMA COTTON

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See May Issue

of Lexington, N. C., the U. S. representative of Platt Freres, of France, manufacturers of this clothing, discussed it briefly, passing samples around the meeting. He explained that up to the time of the meeting, there were only four installations in the United States—three at Lexington, N. C., and one at Kannapolis—but that the clothing, developed in France, had been running as long as seven years on the Continent and in England. He said the experience of these mills had been a saving of from 1 to 3½ per cent of good fibers; that the clothing would hold that much more of the stock in the sliver. The clothing, which has been described in detail in COTTON, is shaped similar to licker-in teeth, being smaller, and is wound spirally around the cylinder, without grooves, on the smooth surface of the cylinder. Mr. Hill said that while the United States installations had been in only a short time, one of the mills had shown a saving of 1½ per cent in good fiber on 8s to 40s; another on 30s, 2¼ per cent, and one on 19s, 3 per cent.

Mr. Hill explained that the manufacturers do not claim that cleaning is unnecessary, but referred to the practice as "cleaning out" rather than stripping, and said this is best done with a brush, due to the construction of the wire. However, he said, the clothing does not require any grinding at all, unless something of a foreign nature comes in, and added that the manufacturers' representatives are equipped in this country to repair the clothing in case of an accident. He said some of the mills clean every three to four days; some every ten days. It may be applied on either the cylinder or doffer, using regular wire on the other, or on both, he said.

This concluded the morning session, and following luncheon, the discussion was resumed for a brief session in the afternoon.

Discussion on Doffer Speeds.

When the afternoon session was resumed, the attendance was much smaller, and there were only two questions remaining on the list prepared for discussion. Later, however, there was some impromptu discussion of topics brought up by individual members.

Mr. Corn asked first, "Which will produce a web with the least neps, a doffer speed of 10 or 12 r.p.m., all other speeds and all settings remaining the same?" Mr. Corn asked for discussion first on changing the production of a card, say, from 120 to 140 pounds a day; and then considering the same poundage put through with a different doffer speed.

G. S. Jones expressed the opinion that a change of two revolutions in the doffer speed would not make sufficient change in the product to be noticed. I. T. Harvey reported that, carding 18 pounds an hour, he changed from 15 turns a minute to 9¼ turns, and could see an improvement in the sliver, roving and yarn. He said he got 15 pounds more breaking strength on the yarn. He changed from a 16-ounce lap and 63-grain sliver to a 14-ounce lap and 48-grain sliver, keeping about the same draft. Mr. Crocker reported that by cutting down his production from 152 to 130 pounds per ten hours, not changing the weight of the lap, he got considerably less neppy work. He cut his doffer speed from 11.8 to 8.4 r.p.m.

Mr. Crocker added that the product being made affects this, as well as the cotton. "I would like to card 300 pounds a day per card, but if I could cut it down to 100 pounds, I could please almost anybody with the product. The more you put through the more neps you are going to have."

"It is generally conceded by all carders that the lower the doffer speed, the better the work," said Mr. Corn. He then asked for discussion of the results of different doffer speeds, keeping the production the same. At this point Mr. Crocker said, "I have always thought I would rather have a light lap and fast carding, than a heavy lap and slow carding."

W. R. Connelly, of the Pacific Mills, made an interesting report at this time. He said that, "up to the first of the year we ran a 14-ounce lap and a 58-grain sliver, and thought we would try an experiment with fast, light carding. We were making a 14-ounce lap, and cut that down to 9½-ounce, getting the same production from the pickers by speeding them up. We got the same number of beats per pound of cotton, but not the same number of beats per inch. Going to the card, we went from a 22 production gear to a 27, speeding up the doffers from 10 to 13½ r.p.m., and making a 43-grain sliver instead of a 58-grain, and also made a 58-grain finished drawing sliver.

"In the thinner web going from the card, neps show up a lot plainer than with a thicker lap, but I believe that with it we have considerably less neps. We take our screens out and clean and set them twice a year, and examine the edges and keep them in good shape. If they are dirty you will have bad work. If the draft on the pickers isn't right you will have thin places. A lot of things will show up with light carding that you never saw before.

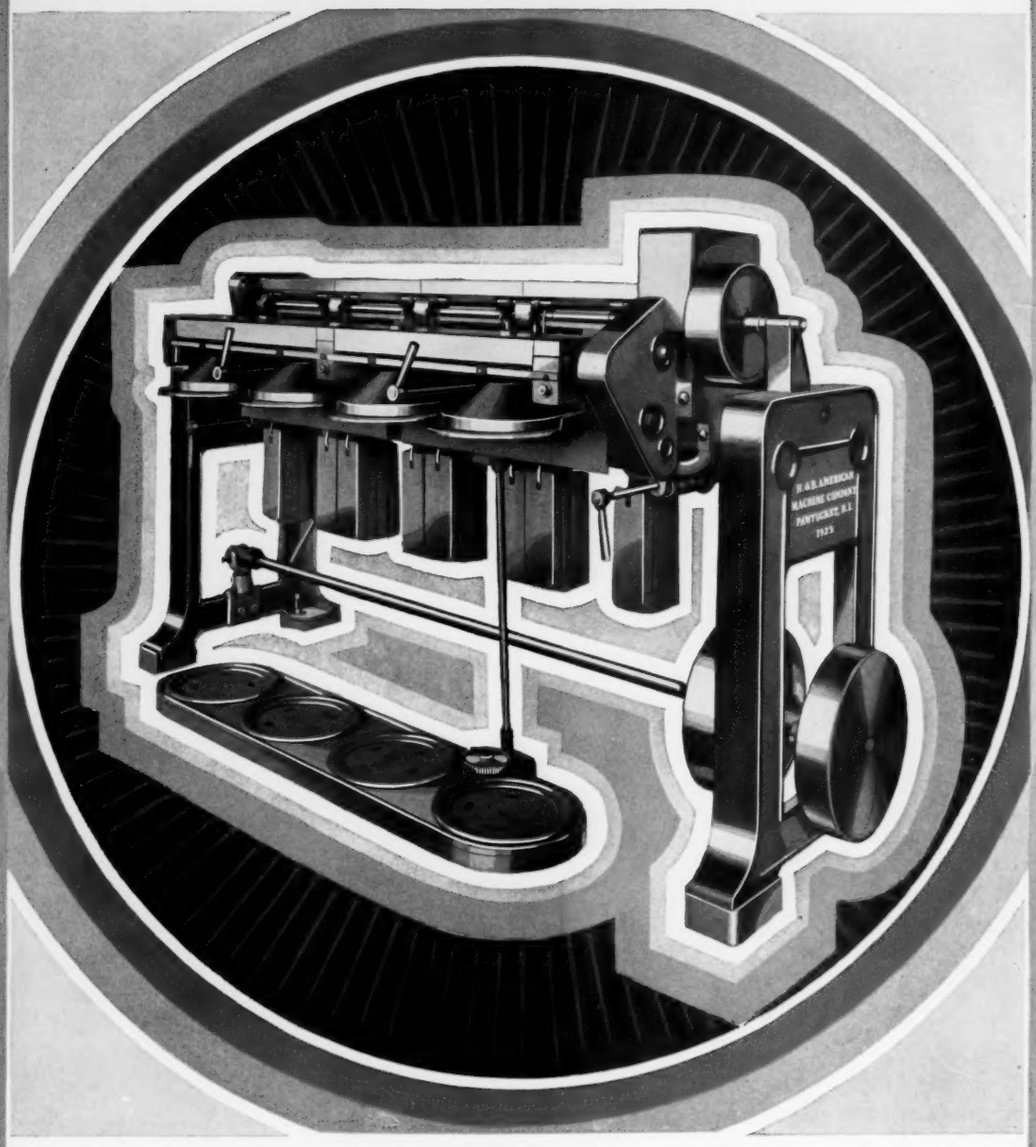
"Since making the change, our end breakage in spinning is much improved, and we get 55 pounds breaking strength on 29s. I believe it improved the strength about two pounds; the spinning is running better, also."

Another man reported that increasing the doffer speed from 11½ to 15½, he found his web looked just as good, but the breaking strength did not hold up. Inquiry here revealed that among the men present, the highest doffer speed which had been achieved practicably on a 58-grain sliver was 11⅞ r.p.m.

One- and Two-Process Drawing.

Here the chairman reverted to the compilation of figures made in 1926 with reference to running one, two and three processes of drawing. He said that at that time practically all of the men on print cloth numbers were using two processes, with a little higher percentage on one-process on coarser numbers, as well as on finer numbers. Very few of the men present at Augusta indicated a preference for the one-process method, none used three processes. Mr. Roberts of Watts said he had tried one process on fine work, but it made too uneven a sliver. He said he had run one process at the same speed as two, however, and Mr. Corn expressed the opinion that the general practice would be, in changing from two to one process, to reduce the speed as much as possible; in fact

(*Continued on page* 731.)



H & B DRAWING FRAMES WITH ELECTRIC STOP MOTION

The Drawing Frame is the most important machine employed in the cotton spinning trade for parallelizing the fibres and regularizing the slivers. To prevent the formation of irregularities in the sliver during the drawing process, it is most essential to use a positive, Quick-Acting Stop Motion.

The H & B Electric Stop Motion meets every requirement for speed, reliability, and durability, and has proved to be an outstanding development in textile machinery.

It is quicker acting, less complicated, requires no attention or adjustment, and makes less waste, all of which make for more economy and efficiency in the operation of H & B Drawing Frames.

Production figures, names of users, and descriptive bulletins, sent upon request.

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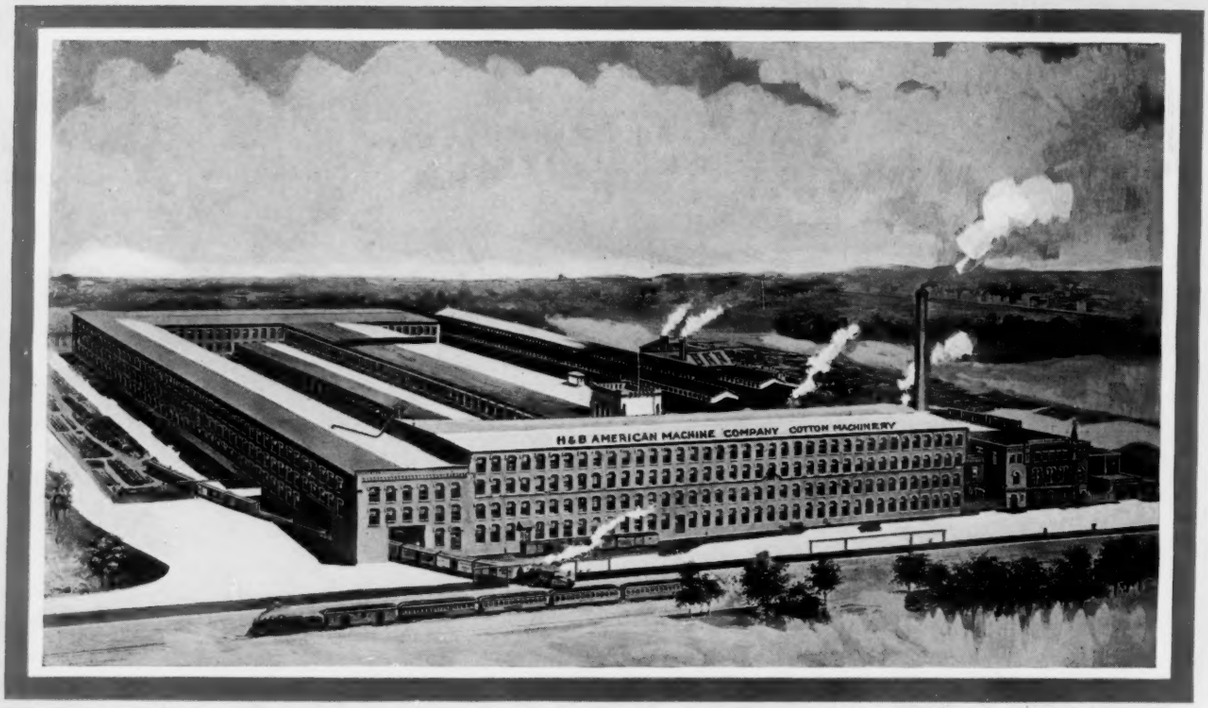

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WHEN you buy a machine made by this organization, you get more than metal—more than a piece of machinery. You get a device that has been perfected for performing a particular operation, one that has back of it the combined experience of engineers who have spent their lives developing cotton preparatory and spinning machinery.

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CURRENT TOPICS

Cotton Versus Jute

By A. H. Ulm.

JUTE AND COTTON, hitherto quite friendly materials, collide. Cotton always has gone to market dressed in jute, which likewise has been a favored covering for manufactured cotton goods. Now they are at war in the precincts of tariff revision in Washington. Cotton growers and cotton manufacturers say that jute, a mighty cheap textile, is a competitor. They ask that its coming into the country be curbed by high duties.

No jute is produced in this country and it is doubtful if any can be produced economically here. India, which ranks next to the United States in cotton production, fully monopolizes the raw jute sphere, confined to a section of Bengal. India produces about five billion pounds of jute annually, and in weight this is the equivalent of about ten million bales of cotton. Nearly a billion pounds of India's jute come to the United States every year. In poundage this is the equivalent of about two million bales of cotton. This jute goes into uses like, or closely paralleling those of cotton.

Usually in the past jute was welcomed by all hands as a desirable import. This was particularly the case in the South, where jute has one of its largest uses as a wrapping for bales of cotton. The manufacturing of jute products is an old American industry. But a little less than one-tenth of jute imports are in the form of raw material. Nearly one-half of this goes into cotton bagging. More than one-half of all jute brought into the country comes in the form of woven burlaps, used chiefly in the making of bags. We weave no burlaps. Aside from bagging and burlaps, considerable jute goes into carpets and into twine made in this country, and a fair volume finds incidental use as packing, sizing and insulating materials.

The chief charm of jute is cheapness for more or less crude uses. It has peculiar advantages as a textile fiber. The extent in which these last are not possessed by cotton is an involved question. In its crudest manufactured form, that of bagging, it seems from all the data that the use of jute costs not more than half as much as cotton.

Its relative cheapness is not disputed; hence the request for tariff duties amounting to about 100 per cent ad valorem. These, it is estimated, would make jute as costly as cotton. The two materials thus would be put on something like an equal economic footing in this country. The extent in which that would bring about the supplantation of jute with cotton is a matter largely of opinion only. If the shift were 100 per cent, the additional domestic consumption of cotton would amount to about 2,000,000 bales, a jump of about 25 per cent. Even one-half as much additional consumption should boost cotton and cotton goods prices considerably.

Assuming that cotton could take the place of jute in most of the latter's uses, much of the additional consumption would be lost unless barriers were erected against other hard fibers like hemp and sisal. For these also can take jute's place in many uses and ordinarily are much cheaper than cotton. Sisal is used almost entirely for the manufacture of binder twine used by grain farmers. While some of the spokesmen for those farmers favor the program of forcing cotton into the channels of jute consumption, it is quite unlikely that Congress can be persuaded to put high duties on sisal, not produced at all, or on hemp, of which we produce only about one-tenth of consumption. Philippine hemp, or abaca, also is involved and with it a question of colonial policy.

A foreign trade equation likewise is involved. During a recent year more than 200,000 bales of American cotton went to India, from which country we import almost no cotton or cotton goods. India is England's biggest market for goods made of American cotton, this absorption amounting to a half million or more bales a year. If the jute trade with India is stopped or greatly curtailed, what will be the effect on India's large-scale consumption of American cotton? One effect of the program would be a primary cheapening of jute. This, together with a raising of the price of cotton, naturally would stimulate the supplantation of jute for American cotton in quarters of the world not within the program.

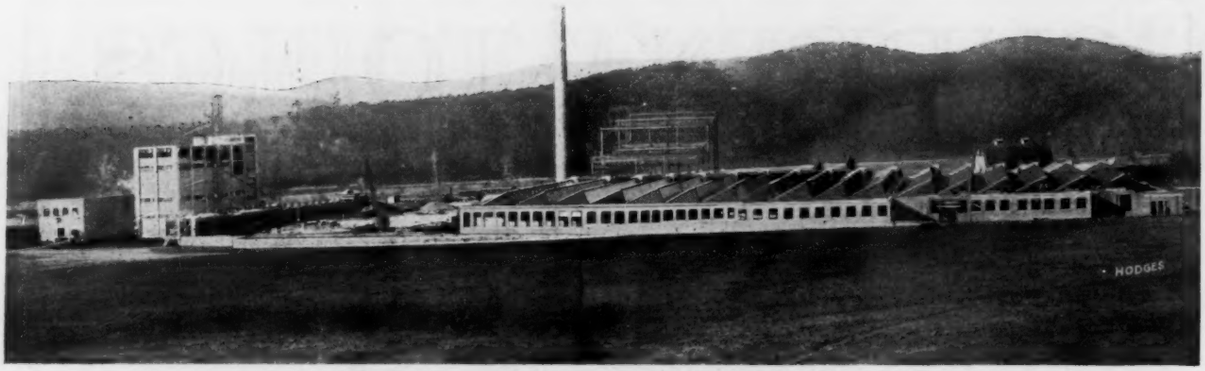
There is an internal question of importance. If cotton were forced into the domestic channels of jute, the country's jute mills would have to turn to cotton goods or go out of business. If they turned to

Unusual House Types in Bemis Village.

AT the new mill being erected at Bemiston, near Talladega, Ala., by the Bemis Brothers Bag Company, the owners are building 140 houses in the village which are of unusual design in many respects. There are nine separate types of plans and designs, all of which are Colonial in treatment. The houses are plastered on rock lath and finished with a sand coat. The floors are of rift pine. The exteriors will be finished with 10-inch square-edged Redwood weatherboarding, with mitered corners. The roofs are flashed with copper, and are asbestos shingles, laid in the "horizontal" method, and are equipped with galvanized iron gutters and downspouts. All porch floors are cement finish, laid on dirt filling. The houses are enclosed with 4-inch curtain walls, and each is provided with an integral fuel room, accessible from the back porch, and finished with cement floor. The houses will be of four, five and six-room single type, with some three and four-room semi-detached types.

All of the houses are completely wired with fixtures and baseboard receptacles, and are equipped with the best quality of plumbing fixtures, including hot water kitchen boilers; enamel iron one-piece sink and drain board in the kitchen. All water supply pipe is genuine galvanized wrought iron.

The R. H. Hamill Company, Huntington, West Virginia, are the general contractors on these houses. J. E. Sirrine & Company, Greenville, S. C., are the engineers on the work



INDUSTRIAL RAYON PLANT AT COVINGTON, VA.

This photograph shows the new plant of the Industrial Rayon Corporation, at Covington, Va. The plant is rapidly nearing completion, and the annual production will be 5,200,000 pounds of rayon. The cost of the property will be approximately $4,500,000. It is expected that production will start in July.

the production of cotton goods expected benefits for existing cotton mills would be reduced. The question of putting the jute mills out of business involves a new application of protection; one which once adopted might be applied in many directions. For example, there are demands, shared in by some of the advocates of virtually prohibitive jute duties, that the principle of protecting to the point if necessary of destroying one industry for the benefit of others be applied to long staple cotton. Requests are that practically prohibitive duties be put on Egyptian cotton upon which a not small proportion of American cotton manufacturing now, with Sea Island out of production, depends. It is disputed that any of our domestic long staple will serve satisfactorily for sewing thread or for certain types of tire fabric. If none will, then high duties merely would curtail manufacturing operations by boosting the cost of things made of Egyptian cotton.

Only tests will provide definite answers to many of the questions raised in connection with proposed tariff programs as to jute and long staple cotton. A try-out might be worth while.

But possible additional uses of cotton as a substitute in the extent for a million or two bales a year in the place of jute are not to be dismissed hastily, surely not in the South which would be helped most if the scheme should work.

Some Enormous Figures

YEAR before last was not a particularly good one, as years go, for manufacturing in this country; but Census figures for factory operations in that year are, like the next preceding ones for 1925, staggering. The total value of the products of all the country's factories with yearly outputs worth $5,000 or more each, was $62,713,947,403, or more than $500 worth of goods for every man, woman and child in the land. The figures are only slightly larger than were the ones yielded by the manufacturing census of 1925. The volume of total output was some greater, for prices were lower in 1927. The value added to materials increased more than the worth of products, or from $26 771,373,163 to $27,585,792,755. This is indicative of increasing efficiency and expansion in the direction of finer goods. The total paid in wages shows an increase, though there was a decline in the aggregate number of workers.

It is worth noting that all textiles, which lead in the principal groupings, made more advance than other big products in 1927 as compared with 1925. The number of plants producing textile products in 1927 was about ten per cent larger than in 1925, though the figures for all manufacturing indicate increasing concentration of operations into larger establishments. The number of workers in all textiles manufacturing was 1,692,473, compared with 1,628,283 when the prior census was taken. The total of wages paid increased correspondingly, the total value of products fell off slightly while that added by manufacture was larger. Raw materials cost less.

Joint Meeting In Atlantic City

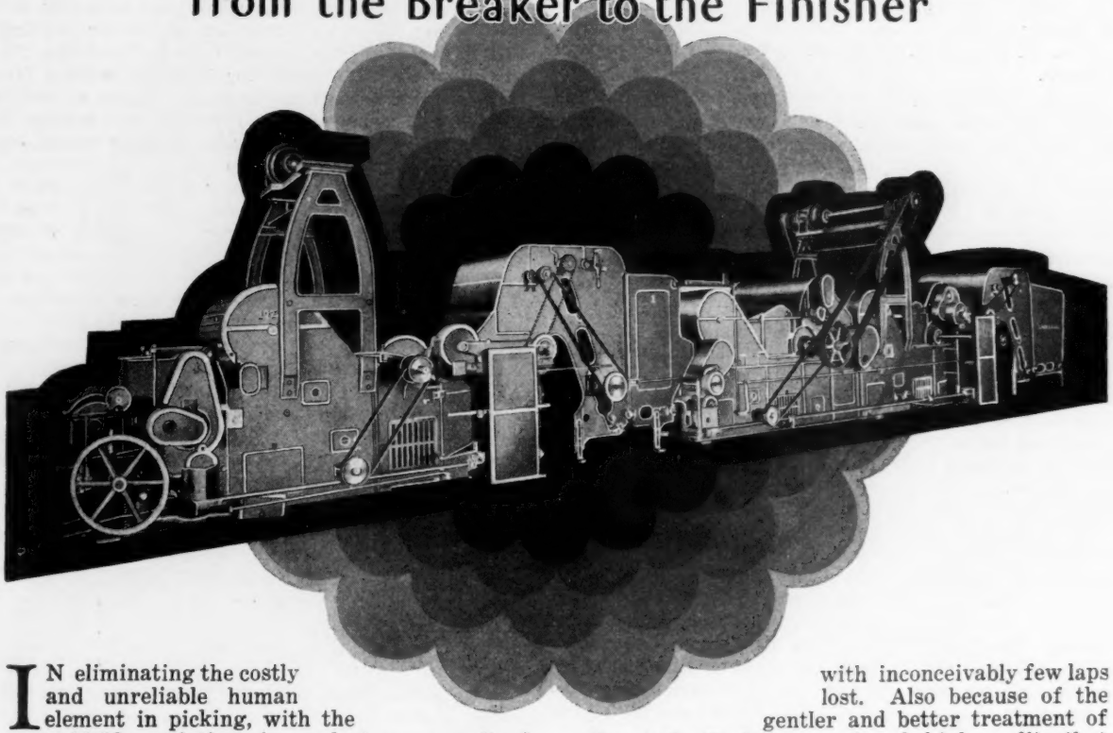
THE two major associations in cotton textile manufacturing will again meet in joint convention. Plans are being made for a joint gathering of the American Cotton Manufacturers' Association, representing mainly the southern mills, and the National Association of Cotton Manufacturers, composed largely of New England mill interests, in Atlantic City, on Friday and Saturday, May 24th and 25th. The identity of each organization will be retained in separate business sessions, but, for at least two sessions, their interests and programs will be merged and a common discussion of subjects and problems of mutual vital interest will be conducted. It will be wholesome for the manufacturers from the two main textile sections of the country thus to foregather jointly. Program details will appear in the May issue.

An unprecedented attendance, representative of all branches of the industry and its allied interests, is anticipated. Headquarters for members of both associations will be the Hotel Traymore.

H. R. Fitzgerald, president of the Riverside and Dan River Cotton Mills, Danville, Va., who is president of the Association, will deliver the annual president's message at this convention, and, coming from so eminent an observer, during the present conditions of the industry, this feature will be especially valuable.

ONE-PROCESS PICKING

Synchronized Control Makes One Machine from the Breaker to the Finisher



IN eliminating the costly and unreliable human element in picking, with the unavoidable variations in product as a result of handling stock piecemeal, the Saco-Lowell One Process Lapper is proving to be one of the most important developments in a half century of cotton manufacturing.

Saco-Lowell's Synchronized Control of the machines in the picking line made this possible. The reports now coming in, telling of the performance of the new installations, are far beyond our predictions of efficiency and excellence. Mills are reporting substantial labor savings, exceptional evenness of laps, yard for yard and lap for lap, with inconceivably few laps lost. Also because of the gentler and better treatment of the stock, the laps are of such high quality that the improvement is noticeable throughout the entire mill, even to the finished product.

These are but the high spots of the progress now being made in many picker rooms. We would like to lay before you the full facts, figures, specifications, and organizations from actual installations in service. Remember:—if your present Saco-Lowell picking machinery is reasonably up-to-date, the Synchronized Control, Intermediate Feeders, and certain other parts can be fitted with a minimum added investment.

Among the mills installing these machines are:

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What the Southern Mills are Doing

THE Lonsdale Company, which operates a plant at Seneca, S. C., has acquired a tract of land comprising 889 acres on the Chattahoochee River a few miles north of Gainesville, Ga., and, it is understood, will erect a plant of 50,000 spindles. J. E. Sirrine & Co., Greenville, S. C., are the engineers. The Seneca Company also operates plants at Blackston, Mass.; Ashton, Hope, Lonsdale and Phoenix, R. I. Jonathan B. Humbert is southern agent, with headquarters at Seneca.

At this writing, B. F. Goodrich Rubber Company has awarded the major contracts for the extension to the Martha Mills, at Thomaston, Ga., which, as previously announced, will be extended by the addition of 50,000 spindles, making a total of 80,000. The main structure when completed will be 1,100 x 135 feet. Batson Cook Company, of West Point, Ga., are the general contractors for the mill and village, which will be named Silvertown, Ga., after one of the Goodrich tire products. 500 houses will be erected also, and a two-story warehouse, 400 x 120 feet. Robert & Company, Atlanta, Ga., are the engineers.

It has been definitely announced that the entire holdings of the Brighton Mills, at Passaic and Allwood, N. J., will be removed to the company's southern plant at Shannon, Ga., where the first unit, the Southern Brighton Mills, have been in operation for several years. The capacity of the original plant has just been doubled, and later the remainder of the equipment will be transferred. Timothy J. Kelly, vice-president, is making headquarters at Shannon.

Supplementary insurance protection in the form of approximately $60,000 of group life insurance has been provided for the employees of the Social Circle Cotton Mills, Social Circle, Ga., through contract with the Metropolitan Life Insurance Co., which also underwrote an earlier coverage program. The new life insurance, doubling the amount of the earlier plan, provides sick and accident benefits, is cooperative, the employer sharing the cost with employees. Total and permanent disability benefits are included in the policy.

Westboro Weaving Co., of Westboro, Mass., has leased the plant of the Lullwater Manufacturing Co., at Greenville, S. C., and will remove equipment to Greenville. Edward C. Richards is general manager. Tapes and similar fabrics will be manufactured.

Provision is made in the general appropriation bill of the State of South Carolina for a new textile building at Clemson College, S. C.

The saw-tooth weave shed of the Chesnee Mills, Chesnee, S. C., has been completed, and with it a new cloth room, which has already been occupied. When present additions of looms are completed, the mill will have a total of 1,000 looms, including equipment for weaving rayon and silk mixtures, as well as cotton fancies. Lockwood, Greene, Engineers, were the engineers.

W. L. Nicholson of Charlotte, N. C., and associates, have purchased the Henry River Manufacturing Co., Henry River, N. C. Mr. Nicholson is treasurer of the Jewell Cotton Mills, Thomasville, N. C.

Ernestine Cotton Mills, Boaz, Ala., manufacturers of twine, etc., have been purchased by the Comer interests of Birmingham.

Lincoln Mills of Ala., Huntsville, Ala., are adding approximately 100 concrete-frame houses to the village. Each house faces a concrete paved street, with paved alley. Streets are being laid for additional residences.

R. G. Campbell is vice-president and general manager of the Walcott and Campbell Spinning Co., which will erect a plant of 20,000 spindles at Gulfport, Miss. The building will be two stories, 400 x 100 feet, and yarns will be the product. Robert & Co., Atlanta, Ga., are the engineers.

Kosciusko Cotton Mills, Kosciusko, Miss., have added 41,000 square feet of floor space, and it is understood, will increase the spindleage from 12,000 to 22,000. J. W. Sanders is the owner and Preston Newell is manager.

COTTON COMMENT

By H. & B. Beer--

New Orleans, March 16th, 1929.

THE cotton market experienced an important advance during the past month, due to numerous constructive developments. Sales of fertilizer tags to the close of February were comparatively small, private estimates as to the world's consumption of American cotton for the first half of the season were in keeping with bullish ideas, the British Board of Trade report for February made a favorable showing, as did the monthly textile report, as well as the Census report as regards February consumption in the United States. Much unfavorable weather inland, especially in the central and eastern belts, was instrumental in bringing about the sharp rise in values. Beneficial rains, however, were had where needed in South and West Texas.

Returns to Secretary Hester as to sales of fertilizer tags in ten cotton states, for seven months, August to February, both inclusive, showed sales of 1,186,993 tons against 1,728,233 tons for the corresponding time last season a decrease under last year of 541,240 tons.

The International Federation of Master Spinners were credited with having placed the world's consumption of American cotton, exclusive of linters, for the first half of the season, at 7,613,000 bales against 8,226,000 for the corresponding period last season. World's consumption of American lint cotton for the last half of last season, according to the Federation, was only 7,181,000 bales, or a total for the whole of last season of 15,407,000 bales.

ASSOCIATION OF COTTON TEXTILE MERCHANTS OF NEW YORK REPORT.

Yards—	February 1929	January 1929	February 1928
Production	292,873,000	342,806,000	300,323,000
Sales	340,709,000	317,078,000	256,328,000
Shipments	309,118,000	345,354,000	285,404,000
Stocks	372,950,000	389,195,000	382,142,000
Unfilled orders	470,176,000	440,585,000	284,817,000

The salient features of the textile report are the large sales, smaller stocks and larger unfilled orders, especially compared with February of last year,denoting mills to be well employed. Meanwhile, or thus far this month, the demand for cotton goods in New YorK has remained good.

Thus far this season the South has marketed 13,836,453 bales compared with 12,284,849 to even date last season, of which 198,052 bales were brought into sight the past week against 154,798 this week last year.

SPINNERS TAKINGS OF AMERICAN COTTON, BALES.

Since August 1st—	This Season	Last Season
North and Canada	1,460,000	1,482,000
South	4,087,000	3,701,000
Foreign Spinners	5,694,000	5,524,000
World	11,241,000	10,707,000

CENSUS REPORT.

United States— Bales—	This Season	Last Season
February consumption, lint	598,098	572,875
February consumption, linters	68,060	57,798
February consumption, inc. linters	666,158	630,673
Consumption, 7 months, lint	4,049,461	4,200,369
Consumption, 7 months, linters	477,556	463,537
Consumption, 7 months, inc. linters	4,527,017	4,663,906
Mill stocks, February 28th	1,746,537	1,668,649
Stocks in pub. stg., Feb. 28th	3,876,215	4,313,843
Stocks in mills and pub. stg.	5,622,752	5,982,492
Active spindles during Feb.	31,007,936	31,726,452

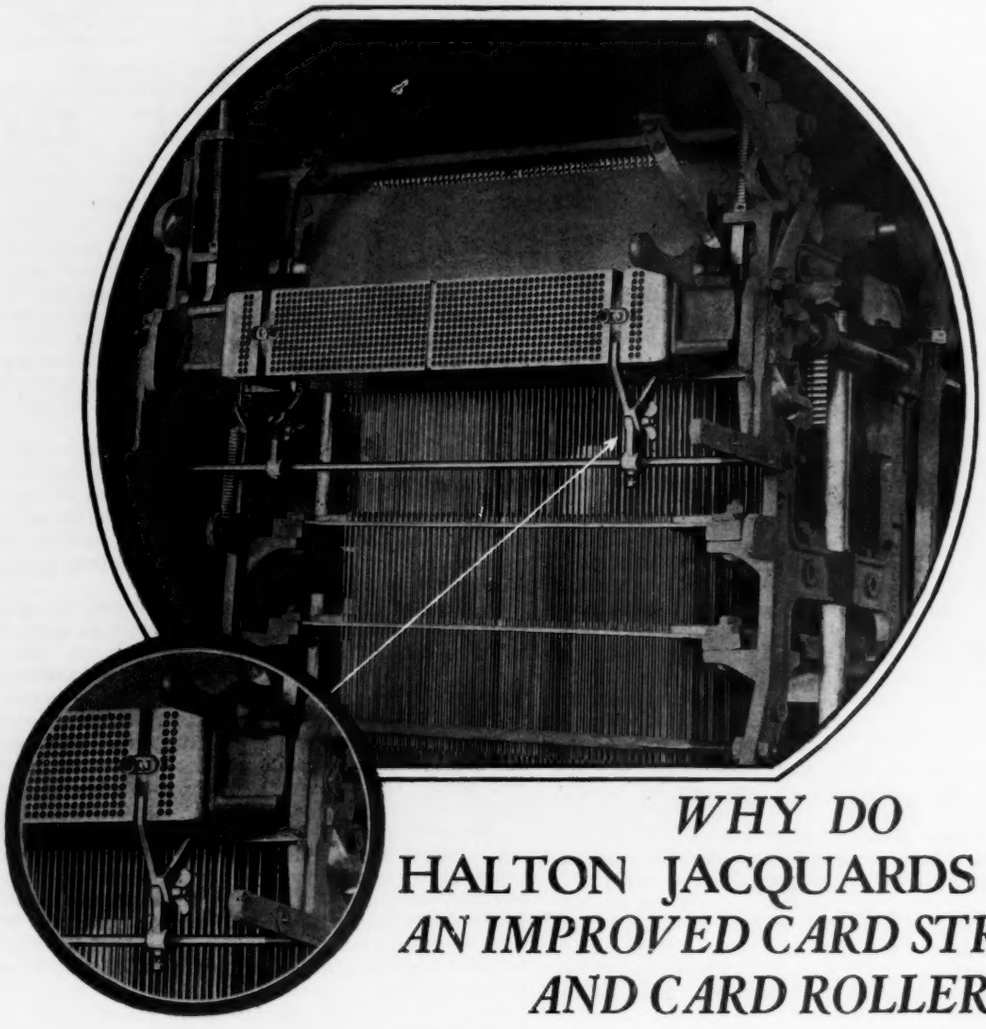
BRITISH BOARD OF TRADE REPORT FOR FEBRUARY.

	This Year	Last Year
Exports of yarn, pounds	14,000,000	14,000,000
Exports of cloth, yards	326,000,000	316,000,000

Recently the Garside Bureau, Boston, stated in a trade report: "The statistical situation and present prospective this season is materially stronger than in any of the past three seasons. A consumption of 15,250,000 bales this season would leave a world carry-over at end of season next July of about 4,400,000 against 5,121,000 at the end of last season, 7,794,000 two seasons ago, and 5,501,000 three seasons ago."

As to preparations for the next cotton crop, too much rain in the central and eastern belts, has retarded farm work. In the western belt conditions are somewhat more

A SERIES OF ADVERTISEMENTS SPOTLIGHTING 3 SPECIAL FEATURES OF HALTON JACQUARDS



WHY DO HALTON JACQUARDS HAVE AN IMPROVED CARD STRIPPER AND CARD ROLLER?

BECAUSE, with the improved card stripper and card roller, all belts and strings are eliminated. There is nothing to become tangled or worn and the sturdy metal parts are permanent fixtures.

¶ This is but one of the many successful features which Thomas Halton's Sons have originated or introduced into this country during their 53 years of experience on Jacquard machines. The performance and durability of Halton's Jacquards guarantee satisfaction to all textile manufacturers who require delicacy and accuracy of design.

See Also
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• A HALTON JACQUARD FOR EVERY DESIGN AND PURPOSE •

favorable, and recent rains in the recent dry areas of Texas are reported as having been beneficial. A long period of dry, warm weather is desired to permit farmers to catch up with field work.

Concerning this year's acreage, nothing definite has come to hand as yet, but the general impression seems to be that there will be little or no increase in the South Atlantic States, perhaps some increase in the Central Belt, and probably a moderate increase in the Southwest (embracing Texas and Oklahoma.)

At present it seems that preparations for the new crop are backward, especially to the east of the Mississippi River, and that sales of fertilizer to the close of February were much smaller than to same date last year, but the acreage remains uncertain, as does developments as to the boll weevil. Last year the boll weevil survival report was issued in early April.

Unless there is improvement in the weather during the last half of March, preparations for the new crop will likely enter the usual showery month of April, to be followed by May when the precipitation is generally the heaviest of any month of the year. A dry, warm Spring would be favorable, but a wet, cold Spring would be detrimental to new crop prospects.

New England Mill Situation.

March 18th, 1929.

NEW England textile mills are more active than at any time in more than two years. A great deal of the business in hand will either prove to have been taken on a very narrow profit margin based upon replacement costs, or it may show a small loss. The indications now are that the first quarter of the year will show better profits than any quarter since the last one of 1927. Liquidation of idle properties is continuing and the change of moment in financial sentiment is that in the direction of encouraging new investment where promising consolidations can be brought about.

Loring Merger Progressing.

Work on the Loring merger at Fall River is making progress. The re-organized Arkwright mills are slowly getting underway. Improvements installed appear to guarantee profitable operation on a double time schedule. The stock holders of the Chace mills have been offered $12.50 per share for their stock by the Loring interests and it has developed that a sale will be made provided municipal interests will consent to sell water to the new concern on a quantity basis, so that a new bleaching and dye plant may be installed. It is proposed to invest fully $500,000 in remodeling the plant and adding a finishing department. Fine curtain materials will be made and it is quite probable that the goods will be completed before being sent to sales agents.

This is a new development in Fall River, where little or no work is done in garment production, or the completion of materials like curtains. If the project as now planned is carried through, whatever made up curtain product may be offered will in no wise conflict with fabrics made on order for the regular converting and manufacturing trades. The Loring people do not propose to go into needle work in any large way. Ways are being sought by the city authorities to supply larger quantities of water from city pipes for manufacturing purposes. Water is abundant enough and the question to be determined is whether it will be supplied by the city.

The matter of double time operations by the Loring people has come up for discussion in a general way with the whole question of running mills over time, or on day and night schedules. In the effort to readjust production in various plants so that deliveries can be made in accordance with the new system of small orders from wholesalers, manufacturers, and retailers, a great amount of night work has been going on this Winter in New England.

Owing to the surplus of operatives available, consequent upon the closing of so many plants, no difficulty has been found in securing satisfactory workers. It has even developed that many operatives prefer to work on what is termed the short night shift of five days a week, on an eight or nine hour schedule. Only male adult help can be employed after hours. They work five days and have a great deal of time to themselves, besides being able to draw a full week's pay.

Night Running Being Discussed.

The policy of operating mills in this way has been adopted reluctantly by nearly all manufacturers as they are convinced from past experience that night and day operations are unprofitable from the production angle to say nothing of the adverse market results that follow. There is not the slightest thought that after the Spring rush is over there will be any such amount of night running as has been seen in the past three months. One factor that has helped the extension of the policy has been that mills have become electrically equipped and it is no longer necessary to run the whole motive plant to operate a spinning or carding department, wherever overtime work has been necessary. The proportion of weaving departments operated is small. Most of the night work has been in preparatory departments where the processes are slow and the yarn numbers high.

Manufacturers look forward to the next meetings of the two national associations at Atlantic City in May as a possible time to discuss the uneconomical sides of the policy of night running in the cotton industry, North and South, and with the hope that some action will be taken to discourage it, and thus strengthen the market prices and broaden producing profit margins.

A phase of this question that is most interesting is that some of the large New England investors in southern enterprises, including many who have been removing their plants to take advantage of more favorable legislative and tax conditions, are convinced that the tendency to run night and day in their southern divisions must be changed lest continued small profits arising from overstocked markets and highly competitive selling, may be a cause for developing real unrest and even unfavorable legislation in southern communities.

Many mills may still run on the basis of quantity output of staple merchandise. There are a great many others where it has been found that diversification of product is essential and that brings up the whole question of whether manufacturers as a whole will not be better off if they unite to control their own output more carefully, and begin by restricting working hours where production is weakening all sales values.

Labor Specialization Plans.

The process of putting "specialization plans" into operation in the mills is making some progress, at New Bedford, where 16 corporations are making a united effort to install the new system. Several mills have adopted the new plans in mills outside of New Bedford with satisfactory results. Where the production is much diversified in the weaving room, and where quality is the prime essential, progress has been very slow. Experience shows that before engineers start in their work in planning what may be done in changing methods of operation in different plants, the overseers, second hands, or others who come in direct contact with the operatives should be thoroughly schooled in what it is proposed to do.

If this is done, the operatives will soon learn that the new methods do not necessarily mean more work and less pay, but will mean a graded system of work, whereby skilled help will be relieved of many parts of their unskilled labors and will devote their time to maintaining production that will eventually lower costs for the whole mill and insure them of steadier wages and work.

The most important new merger of textile properties in New England in the past month, is that proposed as the Berkshire Fine Spinning Associates, comprising a union of 600,000 spindles, 12,000 looms, and representing an annual output of $20,000,000. The new company will be made up of the Valley Falls Company at Albion, Rhode Island, The Coventry Company of Rhode Island, The Berkshire mills of

(*Continued on page* 645.)

See the latest developments in Textile Mill Lubrication

THE Texas Company invites all textile mill executives to visit the Texaco Booth at the Knitting Arts Exposition at Philadelphia April 15th to 19th.

The Exposition is being held in the Commercial Museum by the Association of Hosiery and Underwear Manufacturers.

Many notable exhibits are to be seen at the Texaco Booth; and you will find much that will interest you.

Texaco Spindle Oils have effected almost unbelievable reductions in power cost. Texaco Loom Oils, Top Roll Lubricants, Turbine Oils, Engine Oils, Gear Lubricants and Greases are everywhere bringing new economies and better machine operation to the industry.

The Texas Company's Lubrication Engineers are specialists. Their recommendations are based on the most thorough surveys of mill operating conditions, backed by a Texaco Lubricant for every known purpose. World-wide facilities, with complete stocks of Texaco products convenient to every textile center assure prompt service.

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17 Battery Place
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TEXACO

Offices in
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THERE IS A TEXACO LUBRICANT FOR EVERY PURPOSE

NOTES ABOUT MEN YOU KNOW OR KNOW ABOUT

Arthur E. Kallinich has been promoted to field sales manager of Veeder-Root Incorporated, with headquarters in Hartford, Conn. Mr. Kallinich, who was formerly New England representative, will keep in contact with all of the company's sales territories throughout the country. W. A. Kennedy & Co., and Carolina Specialty Co., of Charlotte, N. C., are the company's southern representatives. Mr. Kallinich has attended several of the Southern Textile Expositions and has an acquaintance throughout the South.

David Jennings, of J. P. Stevens & Co., New York, was recently elected president of the Aragon Baldwin Cotton Mills, Inc., with plants at Rockhill, Whitmire, and Chester, S. C. He succeeds Alex Long.

J. R. Donaldson, for years superintendent of the Harmony Grove Mills, at Commerce, Ga., has become superintendent of the Monroe Cotton Mills, Monroe, Ga., succeeding the late J. Wheeler Mears, Sr.

Ingram Lee, for the past two years assistant superintendent of the Dallas Textile Mills, C. R. Miller Mfg. Co., Dallas, Texas, has been made superintendent, succeeding A. L. Whetstone. Mr. Lee has been connected with the mill for five years. He attended Harvard College and the Massachusetts Institute of Technology.

Pinckney Ligon has been made vice-president of the Mills Mill, Woodruff and Greenville, S. C.

R. L. Poplin, superintendent of the Crescent Knitting Mills, Statesville, N. C., died on February 20th of apoplexy. He had been superintendent of the mill since its establishment in 1917.

J. H. Mayes, vice-president and general manager of the Fitzgerald Cotton Mills, Fitzgerald, Ga., has been made also president of the Cochran Cotton Mill Co., Cochran, Ga., which is associated with Fitzgerald.

Clarence B. Seal, formerly director of the A. French Textile School, Georgia School of Technology, Atlanta, who is now southern sales manager for the Philadelphia Felt Co., Philadelphia, Pa., is representing the company actively in the southern states and recently made a tour of that section.

H. P. Southerland has resigned his position with the Golden Belt Mfg. Co., Durham, N. C., to become fixer and general foreman in the full-fashioned department of the Charlotte Knitting Co., Charlotte, N. C.

J. Z. Erwin has been made superintendent of the Ruth Hosiery Mills full-fashioned department, Durham, N. C. Mr. Erwin was formerly connected with the Golden Belt Mfg. Co., Durham.

Robert T. Dixon, of Charlotte, N. C., has succeeded Douglas Tompkins as manager of the Barber Manufacturing Company's plant at Charlotte, N. C. Mr. Dixon has been associated with Catlin & Co.'s Charlotte office for several years. He assumed his new duties on March 18th.

Horace J. Cochran, president of January & Wood Co., which operates a mill at Maysville, Ky., died on March 12th.

Wilmer C. Dutton, formerly connected with the Tolhurst Machine Works, Troy, N. Y., has become associated with the American Laundry Machinery Co., with headquarters in the general offices in Cincinnati, Ohio. Mr. Dutton is well known in the textile industry, having become associated with the Tolhurst Machine Works in 1916. A year later he was made sales manager, and in 1919 elected vice-president, being then located in the New York office. Mr. Dutton will be engaged in engineering and sales work pertaining to extractors and centrifugals in his new connection.

George G. Rups, for many years connected with the textile division specialty department, American Laundry Machinery Co., Cincinnati, Ohio, has been made manager of a newly created sales promotion department, organized for the purpose of promoting sales of the company's equipment. R. C. Caine, who has been Mr. Rups' assistant, has been promoted to manager of the specialty department.

James S. Watson has been elected vice-president of the Link-Belt Co., with headquarters in Indianapolis, Ind. For the past nine years Mr. Watson has been general manager of the company's Dodge works at Indianapolis, in charge of the production of Link-Belt silent and roller chain drives, and will retain this responsibility, as well as handling the sales of Herringbone speed reducers. He has been with the company continuously for 34 years.

B. Youngblood, for the last three years principal economist in the division of cotton marketing, Bureau of Agricultural Economics, Department of Agriculture, has been appointed principal economist in the office of Experiment Stations, with headquarters in Washington, D. C.

L. L. Hurley has been made superintendent of the Rodman-Heath Cotton Mills, Waxhaw, N. C., succeeding T. W. Harvey, resigned.

T. Walter Fred has resigned as president of the Davenport Hosiery Mills, Chattanooga, Tenn., and has organized a company to erect a plant at Nashville, Tenn.

Floyd M. Tidwell has been made superintendent of the Judson Mills, Greenville, S. C. He had been assistant superintendent under his brother, the late J. T. Tidwell, having previously been overseer.

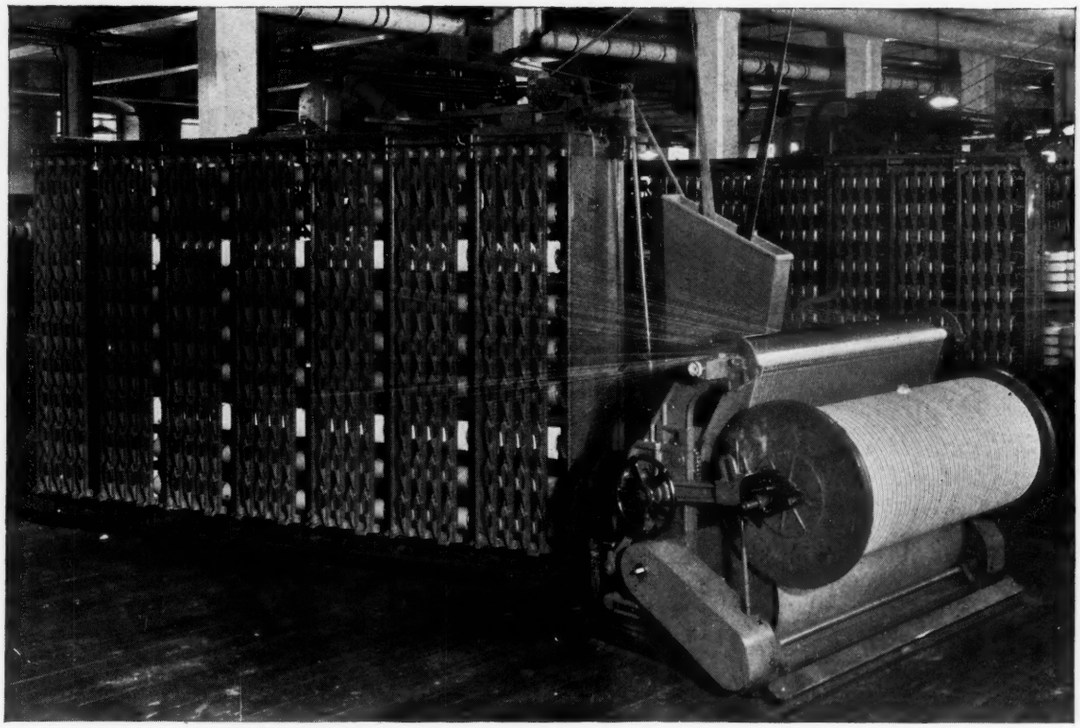
J. J. West has been made superintendent of the Cheraw Cotton Mills, Cheraw, S. C.

Clarence N. Cone, president, Minneola Mfg. Co., Gibsonville, N. C., died on Tuesday, March 12th. He was a brother of J. W. and Bernard M. Cone, of Greensboro, N. C.

Mr. Cone was 53 years of age. He was one of the organizers of the Huco Manufacturing Co., which later became the Minneola Manufacturing Co.

Frank S. Dennis has resigned as division manager and superintendent of the Consolidated Textile Corporation, LaFayette, Ga., to become superintendent of The Trion Co., Trion, Ga., where Carl P. Thompson, formerly superintendent, is now assistant treasurer.

"EVERY KNOT A WEAVER'S KNOT"



STRIPE WARPING AT HIGH SPEEDS

Barber-Colman High Speed Warpers
Are Well Suited for This Work

STRIPE warping is easily done on the High Speed Warper at 500 to 600 yards per minute. The Barber-Colman creel construction allows the pattern to be made up on the trident trucks previous to creeling. Creeling for stripes is accomplished in the same time as for plain goods, and the pattern may be changed for successive beams without reducing production. The High Speed Warper, besides having the advantages of large volume production, also produces beams with a smooth surface and good selvages, which are in perfect balance, *wound under low and uniform tension.*

Think This Over!

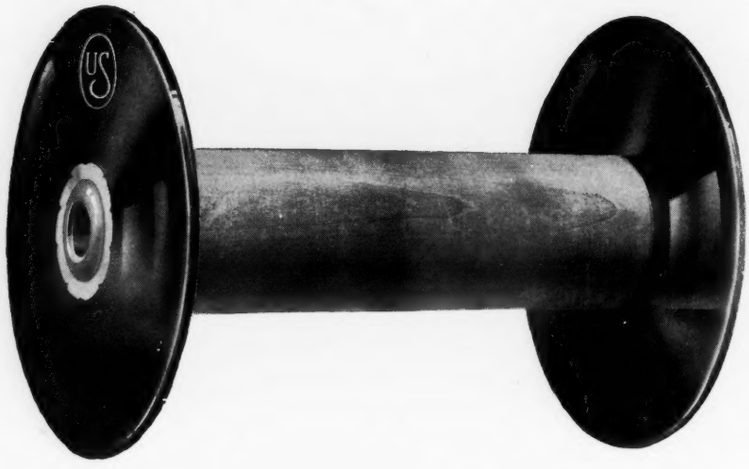
BARBER-COLMAN COMPANY

General Offices and Plant

FRAMINGHAM, MASS. ROCKFORD, ILL., U. S. A. GREENVILLE, S. C.

John Ruskin had the Right Idea

When He Said—



"ALL works must bear a price in proportion to the skill, time, expense and risk attending their invention and manufacture. Those things called dear are, when justly estimated, the cheapest. They are attended with much less profit to the artist than those things which everybody calls cheap. Beautiful forms and compositions are not made by chance, nor can they ever, in any material be made at small expense."

U S Vulcanized Fibre Head Spools have "the priceless ingredient" of U S reputation for quality, backed by the U S guarantee that every spool is well made and finished, will run true, and the heads will not warp, crack or splinter in regular mill usage.

Faster, better, and more economical spooling inevitably results where they are used.

P. S. *U S representatives are always within reach of your mill and are specialists who can offer constructive suggestions. Why not take advantage of this service?*

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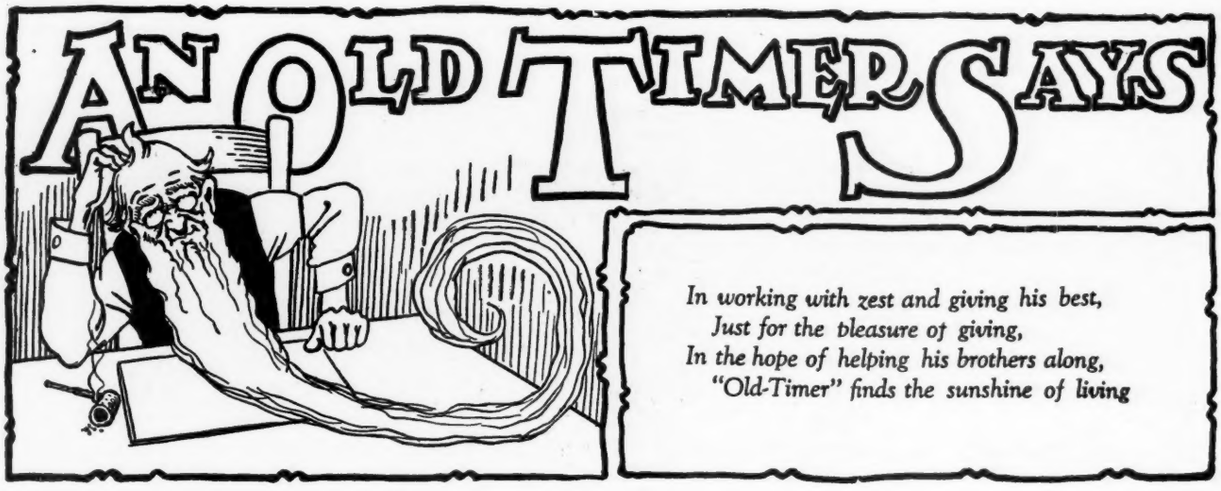
BUILDERS OF BETTER BOBBINS, SPOOLS, AND SHUTTLES


AN OLD TIMER SAYS
In working with zest and giving his best,
Just for the pleasure of giving,
In the hope of helping his brothers along,
"Old-Timer" finds the sunshine of living

Would *You* Hire *Yourself* for Your Job?

I TAKE it for a psychological fact that practically all men like to read detective stories. Now I never wrote a detective story, but I have written so darn much about textile machinery, textile calculations and things pertaining to textiles that I want to take a rest and write about something else, and perhaps the other readers of COTTON would also like a little diversion.

But, being born and reared, so to speak, in the mill, I know I am not competent of writing about anything but mill work, so with this explanation the reader need not expect a detective story or anything else, except to hear an old man talk out of his head. We will excuse you from reading further unless your curiosity is aroused enough for you to run on down through these lines to see if anything may happen to be said that would fit your own particular case.

THIS article is the first which appeared in COTTON under "Old-Timer's" sayings. It was published in March 1922, and some of you may recall it. We consider it in many ways one of the best things "Old-Timer" has ever done, and it is reprinted at this time in response to a multitude of requests. *Editor* COTTON.

All detectives must have a case to work on, and taking up *your* case in particular, I just want to ask you one question and I want COTTON to print that question in bold faced type and give it space enough so that you can cut it out and paste it in your hat. I want you to be sure to see it every time you crown your head.

This question is such a vital one in your case, and as it is intended especially for you, the reader of these lines, I want to ask you to promise to not answer the question for at least two weeks. Then some night, after the wife and kids are all gone to "Nappy's town," sit down and write COTTON frankly, honestly and in your own way of talking, the answer to the most important question you have ever been asked in your life.

Now don't try any tricks on an old timer, because some of my bitterest enemies have said that I can tell pretty well when a man is enlarging on the truth. And I am going to watch COTTON for every answer, because I am interested in every ambitious mill man, and if you will answer this question just the way you feel about it, and give all the reasons, whys and wherefores, it will give, not only myself, but the many mill officials, the editors, and others a pretty fair idea whether you think you are made out of the right kind of material or not.

You would be surprised to know the number of men who are looking for other men for some special job and oftentimes the most casual remark will be the direct cause of a man being offered promotion. I have known of quite a few men who thought they were "big guns" until they "got fired."

It will do you good to really know yourself. Very few men actually *know themselves* as well as they know some other men.

This question I am going to ask you has been given much thought, it has been boiled down, criticized and analyzed, until it contains only seven words. But, golly! they are some big words—not in number of letters, but in importance in giving you an insight into yourself. And after all, *yourself* is the most important thing to you in the world. It is your greatest asset. It matters not how much money or religion you have, "yourself" is the most important thing to your dear wife and kiddies, the most important thing to your employer, more valuable than the most costly machine or group of machines in the mill.

Employers are fast beginning to realize that *men* are hard to find. There is always somebody ready to "fill" a job, but how? Does your employer believe he has in *you* the most valuable man he could find for your job? He should. If not, whose fault is it? I am getting pretty close to that question; just be patient, I'll give it to you in a moment. I want you to be prepared to realize its full meaning. Yes, I know you will smile when you first read it, but after you smile then

The Horse Car

versus

The Electric

CAN you imagine any street car company in this day and age using the horse car in competition with the modern electric?

And yet,—in the Textile Field—there are mills depending on humidifying equipment installed way back in the "Gay Nineties" who try to compete on an equal basis with mills operating at lower costs and turning out superior goods through the use of modern (and, therefore, efficient) humidifying devices and apparatus.

Scores of mill owners have already found out that excessive production costs and inferior products are traceable largely to old and inefficient humidifying equipment. They found the remedy by consulting one of Amco's specialists. These "Air Doctors" are at your service.

THIS newly designed Amco Humidity Control automatically regulates and controls humidity in Textile and other mills without using wet or dry bulb actuated devices.

If you can't answer these questions you ought to send for an Amco "Air Doctor" at once.

1. How much can your production costs be lowered and your product improved by the installation of modern humidifying equipment?

2. What per cent will a modern humidifying system pay you on the investment?

3. What relative humidity is giving your competitors best results in weaving, spinning, carding, knitting, roving and combing departments?

Amco "Air Doctors" gladly answer such questions as these in a written report, *made without obligating you*, after a survey of conditions in your plant.

Why not get their diagnosis? It will cost you nothing and may easily result in changing red figures into black ones.

AMERICAN MOISTENING CO.

Humidifying Devices

Air Doctors Since 1888

EXECUTIVE OFFICES
261 West Exchange Street,
Providence, R. I.

SALES OFFICES
Boston, Mass. Atlanta, Ga.
Charlotte, N. C. Greenville, S. C.

give it an honest-to-goodness, fair, serious thought. But please don't attempt to answer it for at least two weeks—merely keep saying the seven words over and over to yourself every time you put on your hat. I'm not joking, I really mean for you to paste the question in your hat. If you will, you will soon find out what it will be worth to you.

No man can keep this question constantly before him without running his job better. And if you continue to run your job better and better, promotion is just as sure to come as taxes. Here is the question:

Would You Hire Yourself for Your Job?

Having those seven words constantly in my mind has caused me to roll out of bed many a cold morning when the first whistle blew instead of waiting for the second whistle which would just give me leeway to get to the mill on time.

They have caused me many a time to get up from where I had sat down to rest and go hunt for something to do.

They have caused me to do my very best to save a few dollars or a few cents on supplies. Those seven words have been the cause of my getting more production than my competitors. Mr. Superintendent, Mr. Overseer, do you realize you have got competitors?

Ask yourself the question persistently for two weeks. Then, if you are not able to answer it with a clear conscience, keep asking it, and you will continue to grow.

New England Mill Situation.

(*Continued from page* 638.)

Adams, Mass., the Greylock mills of North Adams, Mass., and the Fort Dummer mills of Brattleboro, Vermont.

The products now turned out in largest volume by these mills are fine lawns, mulls, organdies, dimities, india linons, and other plain and medium fancy fine cottons. Gilbert Thompson, of the Berkshire Company, will be the chief operating head. That plant consists of 260,000 spindles and 6,000 looms. It was built by the Plunkett interests, who were leading manufacturers in their day and are now dead. Generally speaking the mills make the types of cloths made in most of the New Bedford mills. The new consolidation is amply financed, the mills are well equipped, and the first result of their union will be a lessening of inter-mill competition that has been devastating.

The New Bedford mills are comfortably supplied with business that will keep them well occupied for the next eight to ten weeks. Many of them are contracted ahead on some lines through the Summer. Silk and cottons, fine piques, fine rayon curtain materials, fine broadcloths, and fine shirtings, have sold well. There is a volume of business being done on dimities, lawns, organdies, voiles, and specialties for printing.

The Dwight Mfg. Co., of Chicopee, Mass., and Alabama City, Ala., is planning to take over the Great Falls mills of Somersworth, N. H., and will sell the valuable water rights to a power company and use the manufacturing plant in conjunction with its own operations. The York Mfg. Co., of Saco, Me., is now being operated on plain and medium fancy specialties and will abandon gingham production. The mills in Maine are running very well. The Amoskeag Company in Manchester is better occupied than it has been for two years. A recent report showed that Rhode Island mills were busier than they have been in three or four years.

New England mils were considerably disturbed by a reduction in rayon prices on February 21st, averaging 10 per cent. Buyers demanded rebates on goods not delivered and there was a sharp reduction in the prices on goods to be made. The incident eliminated all belief in the stability of rayon values arising from the fact that rayon is a chemical product within the control of the producer. It is now evident that prices will be subject to supply and demand conditions, chiefly beyond the control of the manufacturers, and no more easily judged than cotton or other raw material values with which they have to deal.

The printed goods end of the industry is in a condition unparallelled in the history of the business. All of the printers are engaged to capacity and most of them have been running overtime. The American Printing Company of Fall River was forced to withdraw its lines from sale owing to the sold up condition and inability to grant new deliveries quickly. It has been operating 42 machines 12 hours on day shift and 12 machines 11 hours on night shift trying to keep up. The Algonquin, Pacific, Windsor, and other corporation printers have been similarly active. The job printers have been running every machine available. The bleaching and dyeing departments are more active than they were but as a rule they are not averaging more than 65 percent capacity.

New England cotton machinery men reported a bad year in 1928. It is now very evident that replacements of machinery have been greatly deferred in the past five years and the time is not far distant when a revival of demand will be felt. It is already becoming noticeable that mills adopting recent improvements are securing advantages, especially in spinning and in preparatory carding machinery. The increased activity in the New England field is not likely to be reflected so much in the use of cotton as in the employment figures, for the reason that considerable rayon is being used and there is larger use of silk in cotton mills than at any time in two or three years.

New Type of Double Deck Skein Winder for Silk, Rayon and Cotton.

Sipp Machine Co., Paterson, N. J., have developed a new type of double deck winder, for silk, rayon and cotton. The machine is equipped with a separate line of driving shafts for each set of spindles; it is a single drive machine, having single head spring spindles. It is fitted with a new type of traverse motion, positive in action, for building the traverse on the ends of the spools with accuracy, higher speeds, and preventing trouble in subsequent operations. The higher speed also makes it practical to cross-wind the spools, it is stated, which simplifies the finding of broken ends.

Oilless spindle bearings, eliminating the necessity for oiling the spindles, are used. These spindles may be turned part way around, providing a new bearing surface, and extending the life of the bearings. The oilless bearings are clamped in place, and may be renewed readily, a screw-driver being the only tool necessary, it is stated. The bearings are accurately machined, permitting accurate space in erecting, eliminating end play of the spindles and permitting faster speeds, it is explained.

The winder is also equipped with oilless shaft bearings, self-aligning, which eliminate the necessity of oiling the shaft bearings. They likewise are readily replaceable. The double deck feature, it is pointed out, conserves floor space, permitting twice the number of spindles in the same space required by a single deck machine.

Phi Psi, Textile Fraternity, to Meet in Charlotte This Month

THE national convention and annual meeting of Phi Psi, the largest national textile fraternity in the world, will be held in Charlotte, N. C., on April 19th, 20th, and 21st. This is the first time the organization has met in the South, and a man now located in the South, Arthur R. Thompson, Jr., is the first southern man to be President.

The fraternity was founded on March 18th, 1903, by five students of the Philadelphia College of Textile Engineering, to promote good fellowship, social intercourse, mutual advancement of its members and the

Arthur R. Thompson, Jr., National President.

art of textile manufacturing. Its membership includes students in textile manufacturing in various textile institutions, and there is also a list of alumni and honorary members composed of men active at the present in different phases of textile manufacturing.

Phi Psi now has active chapters in the following institutions: *Alpha* Chapter, Philadelphia Textile School, Philadelphia, Pa.; *Beta* Chapter, New Bedford Textile School, New Bedford, Mass.; *Gamma* Chapter, Lowell Textile Institute, Lowell, Mass.; *Delta* Chapter, Bradford-Durfee Textile School, Fall River, Mass.; *Eta* Chapter, North Carolina State College, Raleigh, N. C.; *Theta* Chapter, Georgia School of Technology, Atlanta, Ga.; and *Iota* Chapter, Clemson College, Clemson College, S. C. Alumni chapters have been organized in the following cities: Boston, Mass.; New York City; Philadelphia, Pa.; Providence, R. I.; Utica, N. Y.; Chicago, Ill.; Fall River, Mass.; Newark, N. J.; Springfield, Mass.; Greenville, S. C.; and Charlotte, N. C.

The organization was incorporated under the laws of Pennsylvania in 1905. Following the organization at Philadelphia, *Beta* and *Gamma* chapters were formed in 1904; *Delta* chapter in 1909; *Eta* chapter in 1924; *Theta* chapter in 1925; and *Iota* chapter in 1927. The fraternity now has about 1,500 members, located in various textile centers of this country and several foreign countries, who are prominent in textile manufacturing and allied enterprises.

The convention in Charlotte will be the 26th annual convention of the national body. The three active southern chapters will act as hosts, and an attendance of active, alumni and honorary members from chapters all over the country is anticipated. The committee in charge of the program consists of W. A. Kennedy, *Eta*, chairman, Charlotte, N. C.; Aug. W. Smith, Jr., *Alpha*, vice-chairman, Greenville, S. C.; R. A. Field, Jr., *Eta*, Raleigh, N. C.; E. W. Best, *Theta*, Atlanta, Ga.; and J. W. Gray, Jr., *Iota*, Clemson College, S. C.

The program is as follows: Convention headquarters will be at the Hotel Charlotte. Registration of delegates will be conducted on Friday afternoon, April 19th, and at 6:45 o'clock a supper will be held. At 8:30 o'clock Friday night there will be a smoker and re-union.

Saturday, April 20th, will be the main day of the convention. At 9:30 o'clock Saturday morning will be held the business meeting of the Grand Council officers and delegates, including the conferring of honorary degrees on prominent men in the textile industry. These degrees will be conferred by the Grand Council officers. Election of officers will be held at this session. Following a dinner at 12:30 o'clock, Saturday afternoon will be devoted to golfing and other entertainment, and the concluding feature of the day will be the annual banquet to be held at 6:30 o'clock Saturday evening. Sunday, April 21st, will be given over to automobile trips, sight-seeing, etc.

The National Grand Council officers are: President, Arthur R. Thompson, Jr., Charlotte, N. C.; vice-president, Charles Neeld, Philadelphia; secretary, Mortimer T. Farley, Boston; and treasurer, Edwin Ferrell, Boston.

Among the prominent alumni members of the fraternity who are located in the South are: J. G. Holt, manager, Aberfoyle Mfg. Co., Belmont, N. C.; D. S. Cook, agent, Pepperell Mfg. Co., Opelika, Ala.; Lyman A. Hamrick, superintendent, Hamrick Mills, Gaffney, S. C.; Roscoe O. Roberts, general superintendent, Alabama Mills Co., Birmingham, Ala.; J. A. Miller, Jr., Lilledoun Mfg. Co., Taylorsville, N. C.; L. E. Sutton, superintendent, Anniston Cordage Co., Anniston, Ala., and George P. Kyle, Muscogee Mfg. Co., Columbus, Ga.

Among the honorary members are: George S. Harris, president, Exposition Cotton Mills, Atlanta, Ga.; F. Gordon Cobb, vice-president and general manager, Lancaster Cotton Mills Co., Lancaster, S. C.; Robert A. Morgan, industrial manager, American Chatillon Corp., Rome, Ga.; Robert K. Eaton, instructor, Clemson College, S. C.; R. I. Dalton, Whitin Machine Works, Charlotte, N. C.; Charles E. Mullin, instructor, Clemson College, S. C.; Charles A. Jones, instructor, Georgia School of Technology, Atlanta, Ga.; Thomas Nelson, dean, N. C. State College, Raleigh, N. C.; and W. A. Erwin, Jr., Erwin Cotton Mills Co., West Durham, N. C.

New U. S. Six-Inch Grinder

A new six-inch grinder has been added to the line of the United States Electrical Tool Company, Cincinnati. The grinder is equipped with ball bearings, a heavy nickel steel spindle, a ¼ h.p. motor of 3450 r.p.m. load speed, a fine and a coarse wheel 6-inch x ½-inch x ½-inch, adjustable tool rests and complete electrical connections. The grinder is furnished regularly for 110 volts, 60 cycle current from light socket, but it can also be furnished in 220 volt, two and three phase, also in 110 and 220 volt direct current.

Textile Factors Combine.

Commercial Factors Corporation is the name of the textile factoring organization formed by the recent merger of Frederick Vietor & Achelis, Inc., and Peierls, Buhler and Co. Headquarters are at 2 Park Avenue, New York City. The amount of financing expected to be done annually by the new institution is $100,000,000. The latter named concern was purchased by Commercial Investment Trust Corporation in May of last year, and Frederick Vietor & Achelis, joined the group last January. At that time it was announced that the two factoring firms would be merged in order that the 150 textile mills served by these companies might have the advantages of the increased facilities and resources of a single institution. Management of the organization will remain in the hands of the former heads of the independent firms, and their policies continued. Thomas F. Vietor is chairman of the board of directors, Thomas Smidt chairman of the executive committee, and Robert G. Blumenthal president.

Accountants Publish Book on Budget Control.

How each part of the business budget should be prepared and the principles of its effective operation, together with the summary of benefits, are set forth in a little 40-page booklet entitled "Budget Control, What it Does, and How to Do It," issued by Ernst & Ernst, public accountants. This new book is a revised edition of one published by this organization four years ago. The book begins by defining the budget as a plan for coordinating all forces and directing them toward the attainment of a definite objective. According to the book, the budget estimates, in advance, the factors of time, volume and value necessary to produce a definite amount of sales and profit in a given period. It forecasts production, income, expenditures, financing, profit and financial position.

The procedure in preparing the master budget and the preliminary essentials, represented by the budget for sales, production and purchases, expense, plant editions and plant changes, and for cash proceeds, disbursements, balances and finances, is clearly described in concise detail. The pages given to the classification of expense for budget purposes treat the subject in relation to manufacturing, wholesale and retail establishments.

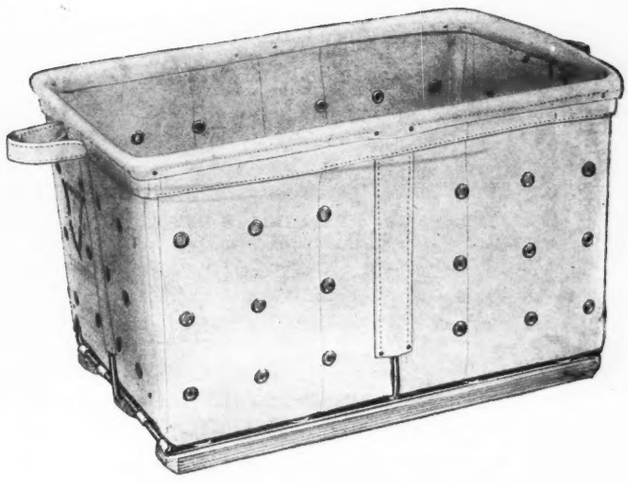
The book states in a clear and concise way the manner in which a well planned and ably directed budget benefits business.

Morse Chain Stock Drives.

The Morse Chain Company, Ithaca, N. Y., has just issued a new publication, Bulletin No. 35, devoted to stock sprockets and chains which are being carried in various localities. The data is so arranged to permit those interested to select two or three different designs to meet specifications, one of which may be most suited to the requirements. Due to the increased demand for service, drives from 1 to 25 H. P. are being added, and can be shipped within 48 hours, bored and keyseated, it is stated. Morse Silent Chain Drives are carried in stock by the following: Carolina Supply Co., Greenville, S. C.; James Supply Company, Chattanooga, Tenn.; Moore-Handley Hardware Co., Birmingham, Ala.; and a number of other concerns throughout the country, as well as at the main plant at Ithaca, N. Y.

An Interesting Valve Test.

Joseph A. Vogel Co., Wilmington, Del., makers of seat-action water closet combination and frost-proof hydrants, have announced the result of a test conducted with the valve of their No. 10 closet. This valve, made of brass, was opened and closed 150,000 times, at the rate of 65 times per minute. An electrical checking apparatus was used in the test. At the conclusion of the test all possible wearing parts of the valve were calibrated and showed practically no wear, the company announces. Joseph A. Vogel, president, announced that the company will adopt immediately bronze of higher tensile strength than that used in the test, although it showed practically no wear.



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The trucks are made of selected clear oak and maple. Triumph Duck, made in our own mills, is used for all coverings. It is harder wearing, weight for weight. Frames are made of specially tempered round spring steel. The bottoms are the most protective yet devised, for they are made of resilient, galvanized steel strap bands, riveted both crosswise and lengthwise to the steel frame. Top rims are bound with chrome leather. The basket shoes and canvas coverings can both be replaced, quickly and at nominal cost, if long hard wear should make this necessary.

The manufacturing and buying resources of Rockweave Mills enable us to price these superior canvas products right in line with the market. Standard sizes are ready for immediate shipment. Special sizes for your requirements will be made on short notice, at reasonable prices. Our salesman can give complete information and take your order. Or you can write direct to us.

Rockweave Mills

LaGrange, Georgia

Man and Method

MAN is the human element in business—its soul and its brain.

Method is the orderly regulation of human effort. Without soul and brain all effort is mechanical. Until man found his soul and began to use his brain with definite purpose, business did not exist. Nor until the growth of business made an orderly regulation of effort necessary did method exist. Success, the attainment of a definite purpose, came with the introduction of method. The development of method made business a science. And the science of business, like any other science, is simply the knowledge and understanding of facts and figures, coordinated, arranged, systemized for practical timely use.

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QUALITY SERVICE

HOW OTHER MEN MANAGE

Practical Discussions by Cotton's Readers On all varieties of Mill Subjects

Questions On Drawing-in Methods.

EDITOR COTTON:

I have a problem in drawing-in on fancy work, which I should like to submit to the readers of your discussion department. I am trying to start my drawing-in girls on the "one girl" drawing-in method—that is, not using a hand-in girl. We have very complicated patterns, and most of our work is two-beam work. We make ginghams, suitings, and handkerchief cloth.

I should be glad to have your readers answer the following questions:

Do you use one or two hooks? Do you use a lease or a comb to draw from? Does the girl begin on the left or right side of the harness to draw in? Do you use card clothing to hold the ends down? Is this the best method?

I would be very much interested to have some answers to these questions, as well as discussions along the line of the subject generally, if any reader has any further information to give in this connection.

CONTRIBUTOR NO. 4151.

"De-Humidifying a Picker Room."

EDITOR COTTON:

In the November issue of COTTON, on page 17-R in the proceedings of the carding-spinning meeting at Huntsville, Ala., the question of de-humidifying a picker room, or the cotton in the picker room, was discussed. In order to refresh your mind on this discussion, I will quote that portion to which I refer:

"The first question asked for discussion on the advantages and disadvantages of using humidifiers in the picker room, and Mr. Ryckman responded to this with his own experience.

"'We have humidifiers in our picker room,' he said, 'but having been only recently installed, we are not in a position to say what advantages we get. We do know from tests that we did not put in any extra moisture in the cotton, but we did succeed in holding what we had in it when we started. For instance, cotton naturally contains between 7½ and 8 per cent moisture, and when it is opened up and aerated it loses quite a lot of that moisture, especially when the humidity on the outside is low. We made a test and found one time that where the relative humidity on the outside was 43 per cent, with a temperature of 76 degrees, giving 5½ per cent regain—we tried to hold 65 per cent in the picker room, and our breaker lap showed it contained 6¼ per cent, and the finisher lap had 6½ per cent.' He explained, in answer to D. S. Cook that he uses atomizer humidifiers, located on the wall about ten feet in front of the finishers.

"Someone asked if the moisture in the laps makes the card sliver run any more even. 'We believe it does,' replied Mr. Ryckman. 'We don't have that up-and-down movement. It doesn't make the individual yard weight any better, but it keeps the fluctuations down in the card room and therefore reduces the changing of gears. We have a control that cuts on and off when it is almost neutral, and it works frequently.'

"Mr. Murphy said the thing that had always bothered him about humidifying a picker room was de-humidifying it, and asked what Mr. Ryckman does if it gets too high. 'We close the room up and put the steam on,' replied Mr. Ryckman. 'We try to run around 65 per cent, and if it gets up to 68 or 70 we close up and cut the steam on.'

I have found it advisable at times to dry out my picker room during dog days, and have also dried out green, damp cotton, in the early part of the cotton picking season, in my picker room. To do this I have raised the dry bulb temperature by turning steam into the steam coils. This will do what Mr. Ryckman says, and I will endeavor to explain why.

(The percentages of humidity and regain used were taken from curves plotted by the U. S. Weather Bureau and by Hartshorne, and not from scales furnished by humidifier manufacturers, but a comparison of the figures with the manufacturers' scales will show the same relative conditions and differences which I give.)

It is necessary to assume certain conditions, therefore we will assume the following:

Water Vapor per 1000 cu. ft. air	1.45 pounds
Dry Bulb Temperature	85 degrees
Humidity	80 per cent
Wet Bulb Temperature	80 degrees
Depression	5 degrees
Regain	9.94 per cent

This condition will give a very humid atmosphere in which to operate a picker room, and it is entirely possible to occur on certain days. A more ideal condition would be to have a relative humidity of 60 per cent and a regain of about 7 per cent; therefore, by introducing steam and closing up the picker room, we raise the dry bulb temperature to 95 degrees, and have the following:

Dry Bulb Temperature	95 degrees
Humidity	60 per cent
Wet Bulb Temperature	83 degrees
Depression	12 degrees
Regain	7.03 per cent

On the other hand, suppose, for the sake of illus-

We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

tration, that the picker room should be equipped with a refrigerating plant to cool the atmosphere, and it should be cooled to 75 degrees dry bulb temperature. We would have precipitation in the picker room because we have reached, or gone beyond, the point of saturation, but, if we cool it to only 80 degrees, we have the following:

Dry Bulb Temperature	80 degrees
Humidity	95 per cent
Wet Bulb Temperature	79 degrees
Depression	1 degree
Regain	12.8 per cent

The reason that these conditions would prevail at the different dry bulb temperatures is because the quantity of water vapor in the atmosphere remains constant. The first example we used showed a relative humidity of 80 per cent and approximately 1.45 pounds of water vapor per 1,000 cubic feet of air. The amount of water vapor would not be changed if the picker room should be heated or cooled, and will not change until the amount of water vapor in the outside atmosphere, which is being drawn into the picker room, is changed, or artificial means of introducing moisture into the picker room, or removing it therefrom, are used.

Heating the picker room is a practical means of dehumidifying or reducing the moisture content of cotton. Mills use drying ovens to dry samples, laundries use drying rooms to dry clothes, and the old-fashioned washerwoman hangs the clothes in the hot sun instead of in the shade to dry, which is to reduce the moisture content—all by increasing the dry bulb temperature only.

I would be interested to see some discussion on this point by other readers.

CONTRIBUTOR No. 4126.

Drafts and Twists for 30s and 43s.

EDITOR COTTON:

I would like to ask a question or so which I would be glad to have some good mill men answer. How would you set the machines from the picker room to the fine frame, taking cleanliness and breaking strength into consideration, on the following lay-out?

We have an H & B bale breaker with a Buckley beater, 30-inch diameter, and a vertical opener with grid bars and screen section, in the opening room. We also have five sections of English cleaning trunks.

The cotton is carried by a 12-inch suction pipe to the picker room, about 150 feet, and delivered to the hopper of the breaker from the condenser. We have one breaker picker with two beaters; the back beater is a cylinder or porcupine, 20-inch, and the front beater is of the two-blade type, with automatic feed control and Saco-Lowell's latest evener motion.

The stock is carried from here to the finisher pickers—we have one Saco-Pettee and one Kitson. All of these machines are 45-inch width. The cards are 45-inch, 170 r.p.m. cylinder speed. We have a total of 26 cards with two grinding all of the time. We have four breaker drawing frames, five deliveries each; also four finisher drawing with five deliveries to the frame. We have two slubbers with 88 spindles per frame, 11x5½, and five 9x4½ intermediates. The front rolls on slubber and intermediate are 1⅛-inch, and the back rolls are 1-inch. We have 15 fine frames, 7x3½, with 1 1/16-inch front rolls and 1-inch back rolls.

What I should like to have is information as to the best drafts, twists, etc., from the picker room on through, to get the best breaking strength and cleanest work. I would have to finish the roving to make 30s warp and 43s filling. We have about 7,200 warp spindles and 6,400 filling spindles, and would have to produce 9,400 pounds of warp roving and 6,100 pounds of filling roving.

CONTRIBUTOR No. 4157.

Yarn Tangles at Top Change on Combination Wind.

EDITOR COTTON:

I would like to see some discussion in COTTON with reference to the combination wind in spinning. By combination wind, I mean the filling attachment with the warp cam on spinning frames, which will give about a 4½-inch stroke. I am running this layout at present, and my spinners like it fine. It runs much better than the regular warp wind does. The only trouble I have found is that the frame is very easily tangled at the top change.

I should be very glad to see some discussion in COTTON from readers who are using this type of wind, explaining any reasons which they might have as to why the yarn tangles at the top change, as indicated.

R. P. B. (S. C.)

Correction in Lay-Out for 70s.

EDITOR COTTON:

You published on page 417 of the February number of COTTON a letter from me giving long and short draft lay-outs for making 70s/1 combed yarn. I regret to find in checking up on this that there was an error in the weights and drafts on the fly frames and spinning in the lay-out on short draft. For the information of your readers, I shall appreciate your publishing this correction. I will give first the short draft organization as you published it:

ORGANIZATION TABLE FOR MAKING 70s COMBED YARN.

Machine	Weight or Size	Draft
Pickers	10.5-ounce	4.38
Cards	33-grain	139.20
Sliver Lap	380-grain	1.74
Ribbon Lap	380-grain	4.00
Comber	49-grain	51.49
First Drawing	55-grain	5.34
Second Drawing	60-grain	5.50
Slubber	.50-hank	3.60
Intermediate	1.64-hank	6.56
Fly Frames	6.00-hank	7.31
Jacks	16.0 -hank	5.33
Spinning	70s/1	8.75

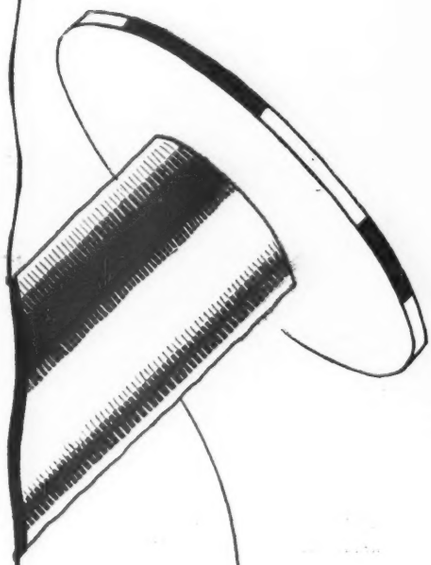
As indicated, my error was in the fly frame and spinning drafts. The figures above, up to and including the slubber, are correct. However, from that point on, the figures should be:

Machine	Weight or Size	Draft
Intermediate	1.25-hank	5.00
Fly Frame	4.50-hank	7.20
Jacks	14.00-hank	6.20
Spinning	70s/1	10.00

I hope the readers who noticed my lay-out in the February number will substitute these figures and make the lay-out correct.

CONTRIBUTOR No. 4101.

FABRICS benefit from Good Spooling



BEHIND the final quality of textile fabrics are many stages of manufacture, every one of which exerts an influence on production. Spooling is one of them, so it pays to discriminate in the selection of Spools.

Lestershire Fibre Head Spools may be bought with the knowledge that better spools are not made. In fact, several exclusive features put Lestershires in a superior class.

Lestershire Spools are machined on every surface. That is significant, for it assures an even winding on or off of the yarn. When the yarn is drawn off a Lestershire Spool the tension is even and correct, excluding the possibility of stretching the yarn to the point that "thin spots" result in the fabric.

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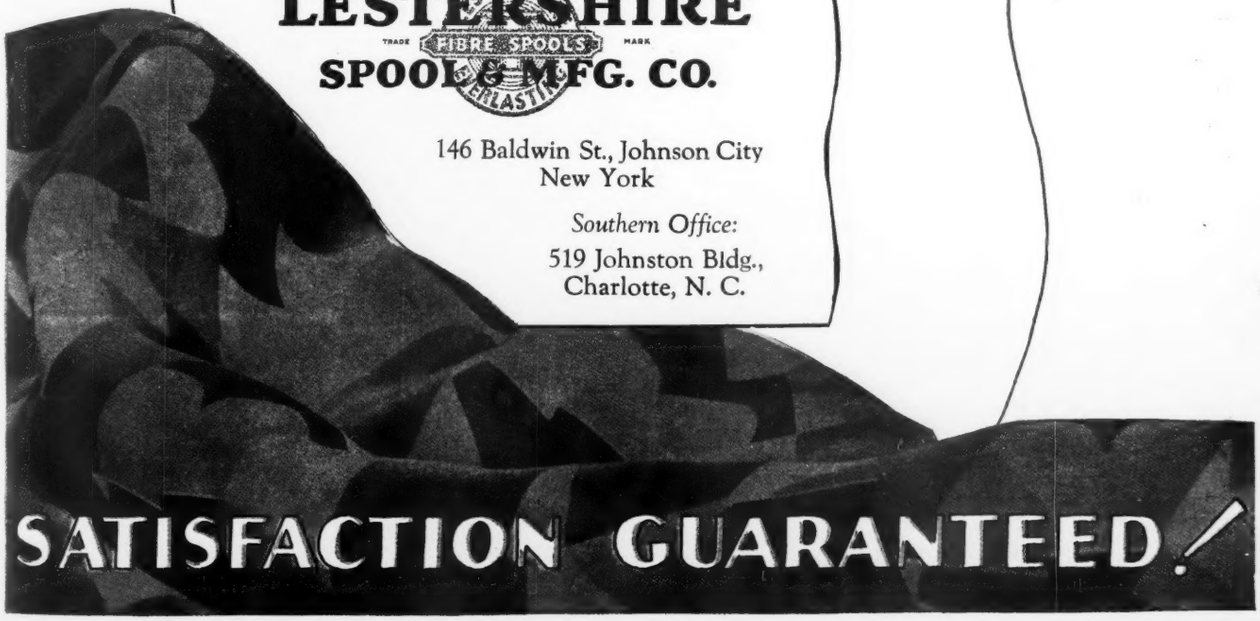

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When blends are made, when the laps come from the picker, at the roving frames, in the spinning, weaving and finishing rooms, there are many chances for error. A Toledo Scale, at each of these vital points with its fine accuracy and unfailing ruggedness, will quickly save its cost many times over.

We shall be glad to help you from our own experience in studying the weighing problems of textile mills. The Toledo man will be glad to explain just what models you need, how they safeguard quality and stop the leaks that eat away profit.

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C-3

Another Method of Re-Sizing Warps.

EDITOR COTTON:

Some time ago one of the readers requested a method for re-sizing warps. Later, in looking through the November issue of COTTON, I read an article supposedly in answer to this question, which I must criticize.

It is obvious that anyone attempting the job of resizing 5,000 ends of 50s yarn, with a one and one lease will not get very far before the threads are so badly crossed that a new start will have to be made. Well! what are we going to do then? Now, just a minute, and I will elucidate. There is a correct way of doing this job and making a success of it, but one will not find a lot of mill men that really do know how, and there is no discredit in that, no, not at all.

The overseer of slashing or dressing with a wide experience who really does know how to re-size cotton warps is rather hesitant about displaying too much knowledge about the feasibility of re-sizing warps and will depreciate to some extent its practicability. Years of experience have taught him that oftentimes warps somehow will weave perfectly all right even if undersized. Times without number we have known of warps supposedly impossible to run (according to certain fixers) which would, when looked over by the second hand or some other fixer and a few adjustments made and certain corrections made in the settings, run well and nothing more would be heard from that "station".

Cases of this kind happen occasionally, and when they do, one cannot expect the boss slasher to admit that there is anything wrong with his size, nor is he going to intimate anything about the possibility of re-sizing any of the warps already made.

There is a considerable divergence of opinion on this subject and the writer has met with many old experienced mill men who do not believe that it is possible to do a real good job of re-sizing. One cannot blame them, after seeing many of the well intentioned attempts along this line.

Just why the one and one lease, or running through in tape fashion, should be used in trying to re-size a warp has always been more than we could understand, because, if a little thought were used we must know that we must get back to the way the warp was first made as far as possible. It really doesn't matter if there are 3,000, 5,00 or 10,000 ends in the warp, if the proper number of lease are picked, there will be absolutely no trouble in re-sizing any warp. It is impossible with a one and one lease to do a nice job, or in fact any kind of a job that will weave satisfactorily.

Suppose that a warp of 5,000 ends of 50s yarn has been sent back from the weave room, and it is decided that it cannot be woven into good cloth as it is too soft. It really does not matter whether it is under or over 5,000 ends, nor what the yarn is, or if there is a colored thread in the warp.

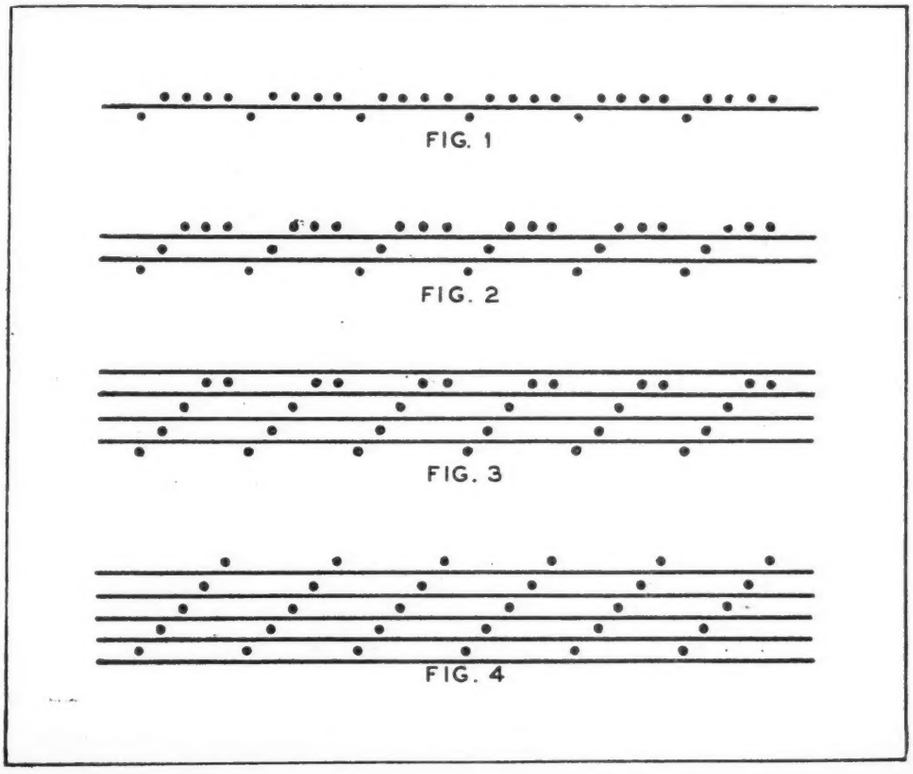
The warp is placed in the slasher creel, either in No. 5 or No. 7, preferably in the position of running "over". A heavy roll is placed in No. 4 or No. 6, according to the stand the warp was put in, so that the yarn can run from the warp up over the roll, thence to the size box. After weighting properly, the yarn is run up a short distance in order to straighten out the threads, a web-drawer's comb is struck into the sheet of yarn and a cap put on and tied. We are now ready to commence the operation of splitting the warp with a threaded lease needle. Starting from the right hand side four threads are picked up and one left down all the way across the warp. This gives the effect shown in Fig. 1, when finished.

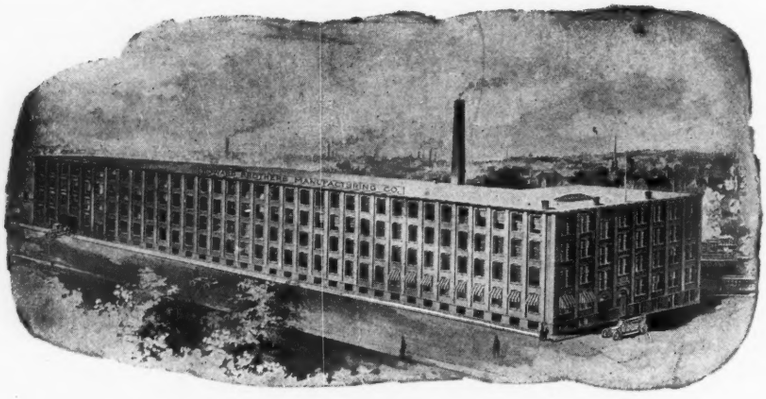
Commencing on the second lease, after the first lease has been completed, the needle is re-threaded and three threads are picked up leaving one thread down across the warp. The results gained in this second lease are shown in Fig. 2.

When picking the third lease thread the needle and pick up two threads, leaving one down. The results of this lease are shown in Fig. 3.

The fourth and last lease is a one up and one down, and the warp is split as it should be for re-sizing. This is shown in Fig. 4.

Iron rods are inserted in place of the strings used





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for picking leases. These rods are tied in parallel so that the yarn will run in smoothly between them. After the rods are tied securely we are ready to go to the front of the machine.

It is understood, of course, that the strings for the four leases used in picking the leases will be left in and run through to the front to be replaced by the iron splitting bars. With the warp in the web-drawer's comb one can proceed to "count in" or "strike in," whichever they are accustomed to doing. After this the size can be drawn and the warp is ready to run. In re-sizing warps it is not desirable to use a full strength size because the yarn having been processed once will take the size easily. This will make the threads brittle.

While this method of splitting the warp is usually conceded the best, some advocate as many as five or six leases on a warp of 5,000 ends. Considerable experimenting has developed the fact that four leases are really sufficient and will give excellent results.

It is interesting what can be done using other methods. I once had a lot of handkerchief warps to re-size on one occasion, due to the fact that poor ingredients along with improper mixings were used before I arrived at the mill. Picking leases got rather wearisome and an easier method was looked for. Lo! it was discovered that three leases picked in the way described were sufficient. Not only that, but the yarn was picked from the web-drawer's comb using *dents* of yarn instead of single threads. These warps were composed of white, color and cord and were a mighty particular job.

An amusing feature in relation to this job was the fact that the superintendent was an old experienced mill man and he was greatly interested in the procedure. All the time preparations were going on he was nervously walking up and down and around the room. His mind was on those costly warps that the weaver insisted he could not run unless more size was put on them. Much depended on our ability to accomplish the desire for more size. After completing the preliminary work we started the slasher and the machine was operating as on any other kind of work. The superintendent came over to the machine and saw that it was working successfully. He took off his hat and while wiping his brow he said, "Man, man, I've seen re-sizing attempted many times, but that is the first time I have ever seen it done successfully."

After years of experience one naturally gets "hard boiled," and these things usually pass over one's head. But we do get a sort of satisfaction out of doing things well. There is always before you the fact that somewhere or somehow recognition of skill was lost in the cotton industry.

We are quite sure that if the contributor who asked for this information will apply this method when having to re-size warps he will find it very efficient.

SCOTCH (MASS.)

Yarns Corp. of America Removes New York Office.

The Yarns Corporation of America has announced the removal of its New York office and warehouse to larger quarters at 290 4th Ave., Cor. 22nd Street, New York City.

Mineral Oil in Softening.

EDITOR COTTON:

I have been reading the several articles published in COTTON concerning the using of mineral oil as a softener for cotton yarn and fabric. This began in the article, "The Preparation of Yarn for the Knitter," by Burton F. Mitchell, published in the August, 1928, issue. Then you published a letter in your discussion department in which a correspondent had taken issue with Mr. Mitchell in the statement he had made that competent dyers regard mineral oil as a dye resistant and that it must be removed entirely from the yarn before the yarn can be dyed uniformly. This correspondent in the February issue pointed out that this is a rather broad statement to make and might cause some misapprehension as to the safety of using mineral oil.

This man went on to point out, in connection with various objections to mineral oil, that all bleachers know the difficulty of removing oil spots made by dripping bearings. He explained clearly that these drippings are not mineral oil, but are a mixture of oxidized mineral oil, soap, metallic soaps and oil compounds, together with tarry matters produced by the action of metal in the bearings with the acids in the soaps, under the influence of heat.

He is entirely correct in this statement, and I recently had an experience which proves this to me conclusively, and which demonstrated that the use of a light form of mineral oil, not to excess, would not prove harmful in the finishing processes. Feeling that it might be of interest in connection with this discussion, and of possible value to some of your readers, I will relate it in this letter.

I was called into consultation by a finishing plant which was having difficulty with what were apparently oil spots on the goods, the goods being noticeably tendered at these spots. However, tests showed that there was no special weakness in the yarn adjacent to these spots, indicating that the spots themselves were causing the tender goods.

I tested the source of these spots back to the mill where the goods were woven, and found them to be caused by drippings from running bearings. I was told that it was the action of the mineral oil used for lubrication which caused the tendering action of these spots in the goods.

After investigating the matter, we secured samples of the various kinds of lubricating oils used by the mill for their bearings, and applied spots of these oils to the goods and ran them through the same process in the finishing plant, and these spots came out beautifully in the scouring operation. This indicated that there was nothing in the mineral oil itself to cause the tender action on the goods. Going further, we secured samples of the oil after it had run in the bearings for some time, and took sufficient quantities to make an accurate chemical analysis. These analyses disclosed in this oil certain amounts of tin, antimony, lead and iron, which had been taken up by the oil in the operation of the bearings under friction. It was our belief that the presence of these metals in the oil which drips from the bearing onto the cloth, pro-

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duced a catalytic action on the acids in the de-sizing operation, causing a concentration of the acids to the points where the oil containing these metals had dripped on the cloth.

To further prove this contention, we placed some ordinary tallow in some of the bearings, allowing it to run for a sufficient length of time to absorb some of these metals, and then applied some of this tallow to the cloth, and ran it through to the finishing operation, and the result was tendered spots at the points where this tallow had been applied, proving further that it was the metal content of the drippings and not the mineral oil itself, which had caused the tendering of the goods originally complained of in the sample which was initially submitted to us.

I shall be very much interested to see further discussions, pro and con, on this subject by your readers.

CONTRIBUTOR NO. 4097.

Marking Roving Without Injuring Quality.

EDITOR COTTON:

I read with much interest Mr. Albert Grimshaw's article in the December issue of COTTON, regarding the removal of chalk marks from yarn and roving. This article is one of vital interest to the manufacturers of yarn for the knitting trade and the mills which weave their own yarn.

We had considerable trouble with chalk marks showing up in the cloth. We cautioned all the second hands to see that only a very small mark was put on each bobbin. This would answer our purposes for a few days, but the second hands would soon relax and we would have the same thing to go over with again. We finally worked out a system that has proved very satisfactory to us, and I am passing it along to you, in the hope that it will be of some help to some other readers of COTTON who are having this same trouble.

We run, on the average, three different hanks of speeder roving, 3.60, 4.40 and 2.00. The 2.00-hank roving is run on a bobbin with a red top and each frame hand is required to mark each of their bobbins at the top with their mark. The 3.60-hank roving is run on a bobbin that is painted yellow at the top and the frame hands are required to mark their roving in the same manner. The 4.40-hank roving is run on a bobbin with a green top and marked the same way as the other rovings.

The advantage of using a different colored bobbin for each hank is that the hank can be determined at a glance and it removes any possibility of the roving becoming mixed in the spinning room by the men who lay up the roving. If more work is placed on one hank roving and it is necessary to repaint a few of the bobbins, this can be easily done by dipping them in a pan with only enough paint in it to cover the desired amount of the bobbin.

At first we were using a large crayon to mark the roving, but no matter how much we cautioned the roving marker not to make a large mark, some of the bobbins would have a big chalk mark on them. The chalk would become blunt before she reached the end of the frame. We have found that we can use a small crayon, about the same size as are used in the school

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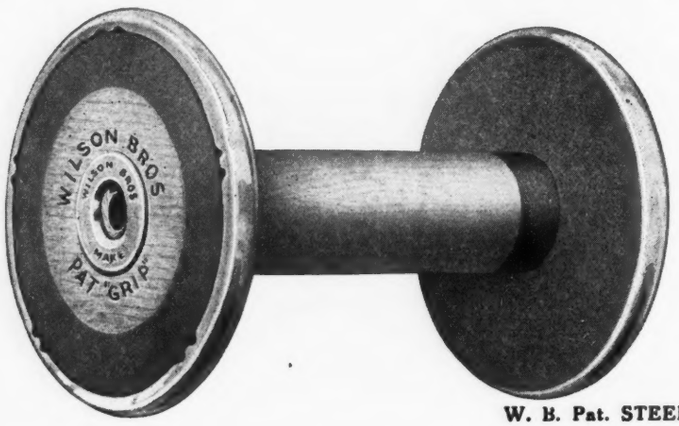

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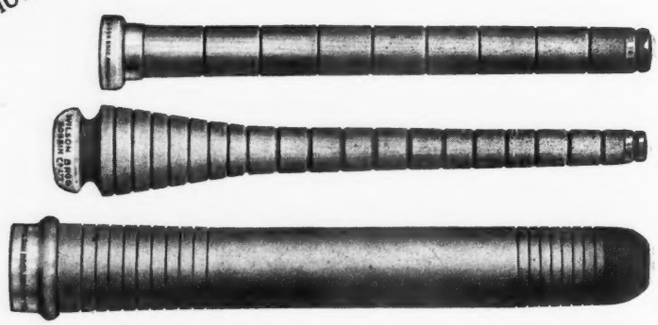

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rooms, and avoid the big marks.

We require the roving to be marked with a dot at the top of the taper. By having the bobbin marked at the top of the taper we are able to trace all singlings and doublings back to the hand that made them regardless of how much of the roving has been run off. We caution the roving marker to mark all frames before they are one-fourth full.

The few suggestions that I have offered here are meant to help anyone who has been having the same trouble that we have been having. Mr. Grimshaw's article is something that is worth while, but I believe that an ounce of prevention is worth a pound of cure. The best way to keep chalk marks out of the finished yarn and cloth is to have only a dot put on the bobbins and not a long broad streak.

CONTRIBUTOR No. 4146.

Determining Pressure on Top Rolls.

EDITOR COTTON:

In looking over methods by which the total pressure on top rolls could be determined, I found one or two published in COTTON, which according to certain principles of mechanics, are erroneous. To bring the above solutions back to mind and to further illustrate my point, I will use the same sketch used by "H. D. M. (S. C.)" in his method for solving weighting problems. (See Fig. 1).

The solution given for this problem indicates that $\frac{2.5 \times 4.125}{.625} = 16.5$ pounds, is the correct weight upon the top rolls, but this is incorrect because the fulcrum point is at *A* instead of at *B*. Any doubt as to the location of the fulcrum point will be eliminated, if a careful examination of this point be made. Upon ex-

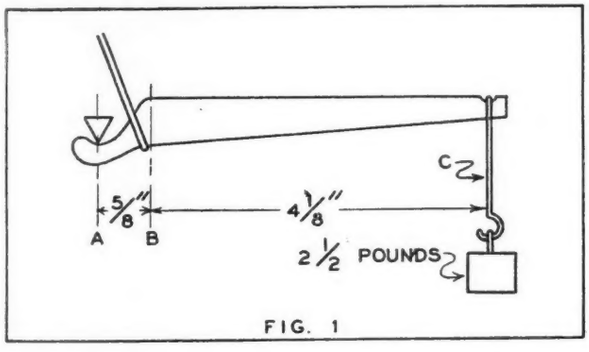

FIG. 1

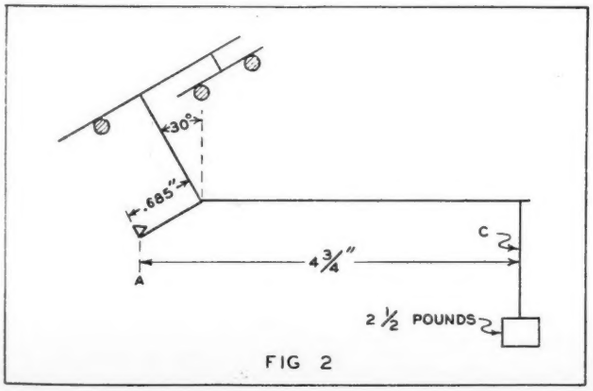

FIG 2

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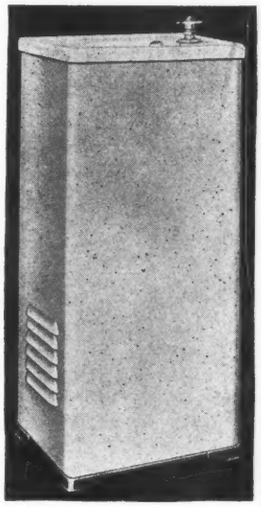

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amination the observer will notice that point *B* has a slight change in position at times, and this would indicate that the fulcrum point is at *A*. It can be seen from this solution that the distance *A* — *B* is taken as a moment arm, but in the correct solution it would be more than 5/8-inch.

A rule in elementary mechanics states that a moment arm of a force must always be measured along a direction perpendicular to the force, and under this condition the solution would be as follows (see Fig. 2):

From the figures given it will be seen that point *A* is taken as the fulcrum point, and *A*—*B* is the perpendicular distance to the line of force *B*—*X* from the fulcrum point *A*. To analyze the subject in question let us consider the drawing in Fig. 3.

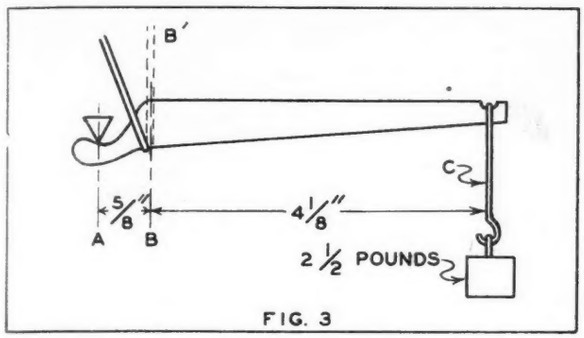


FIG. 3

For simplicity let us consider the same data as used in Fig. 1. The solution, $\frac{2.5 \times 4.125}{.625} = 16.5$ pounds is not the weight pulling down on the stirrup, but is in reality the pressure acting upon the fulcrum *A*. Now if the two forces namely, the downward thrust of the fulcrum necessary to counteract the force of 16.5 pounds, and the downward pull of 2 1-2 pound weight be added, we then have the total weight of 19 pounds acting upon the stirrup, providing however the stirrup is in the position *B B′*.

This is not the correct solution because the important factor of angularity has not been taken into consideration. As the correct solution may be seen by referring to Fig. 2, more need not be added.

H. H. (MASS.)

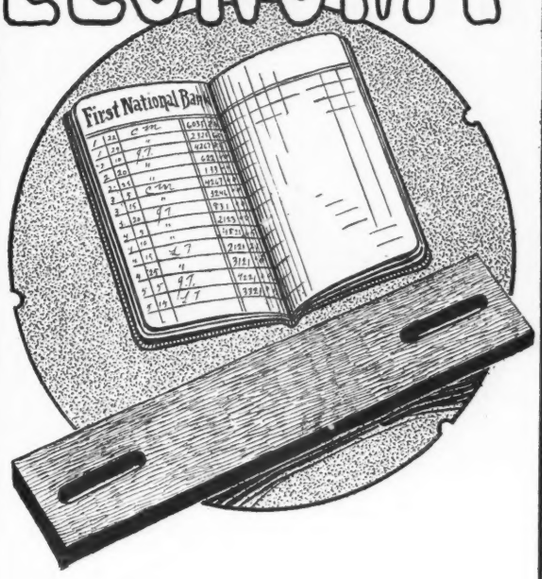
Industrial Changes Yarn Classification.

Effective in February, Industrial Rayon Corporation, West 98th Street & Walford Avenue, Cleveland, Ohio, have changed the classification of grades of Industrial Premier Rayon as follows: A grade skeins will hereafter be known as first quality, and the former B and C skeins will be combined to form a new grade known as second quality. The coned product formerly designated as A grade, will hereafter be known as first quality, and the former Non-Standard cones as second quality.

Armstrong Cork Company Moves Offices.

The Armstrong Cork Company has announced the consolidation of the offices of all of its divisions at Lancaster, Pa., effective April 1st. This involves the removal from Pittsburgh of the general office of the company and all executive offices of the Armstrong Cork Company, Cork Division, and of the Armstrong Cork and Insulation Company, with the exception of the purchasing department, which will remain in Pittsburgh.

ECONOMY



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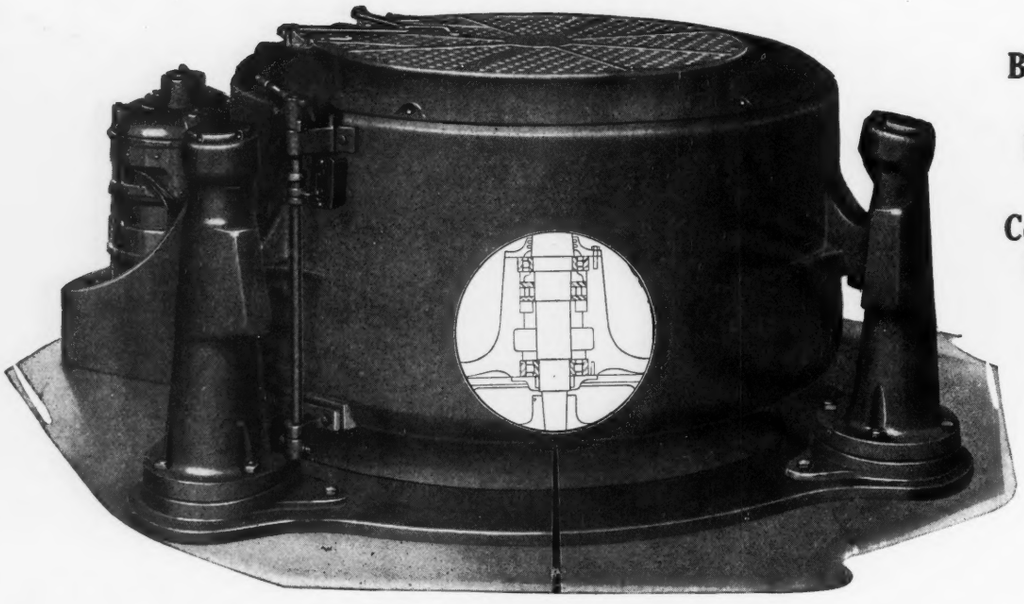

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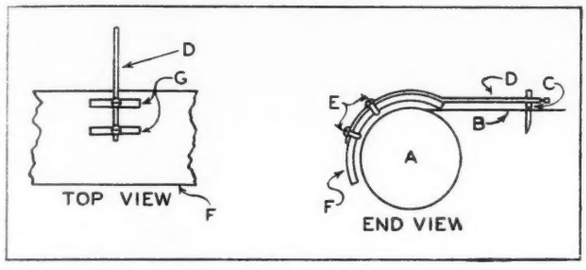
Methods of Splitting Cloth on Loom.

EDITOR COTTON:

Responding to "CONTRIBUTOR NO. 4102," who desires suggestions for splitting 36-inch goods 20 inches from one selvage, for a special customer's requirements, my experience in handling this kind of work is to skip several dents at the proper place in the reed, where the fabric has to be split, leaving a space 3/16-inch wide and fastening a knife to the breast beam and splitting the fabric from underneath. I believe this could be done more economically in this way, unless the cloth room is equipped with a special machine for splitting.

The accompanying sketch will show how the knife is made and applied. The knife holder should be made



of 3/16th-inch flat iron, one inch wide. Two slots about two inches long should be cut in the breast beam to allow for adjustment of the knife holder. Explanation of the letters in the sketch is as follows: *A*, sand roll; *B*, cloth; *D*, knife holder; *C*, knife; *E*, bolts; *F*, breast beam; and *G*, slots for bolts.

T. G. (TENN.)

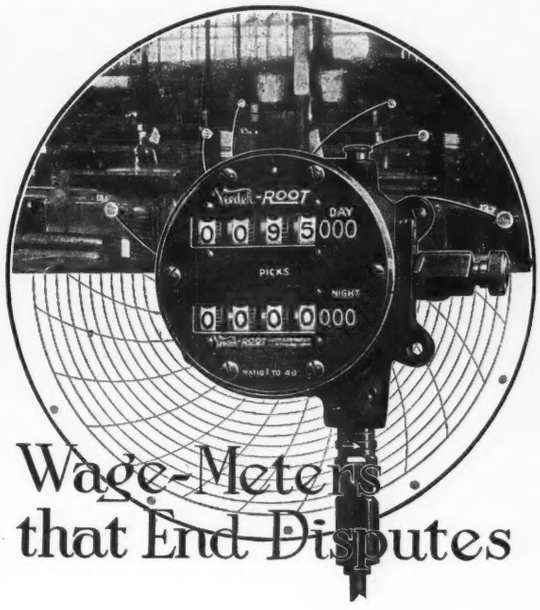
EDITOR COTTON:

There are several ways by which cloth may be split, as brought up by "CONTRIBUTOR NO. 4102" in a recent issue. He said an order for 36-inch goods calls for it to be split 16 inches from one selvage, and he wanted to know whether it would be better to do this with a knife on the breast beam or to do the splitting in the cloth room.

If this man has Draper looms with the high roll take up, and the loom is not too old, let him tighten up all loom frame bolts, all lay and sword bolts; in fact, every bolt that would in any way cause the loom to become rigid when running. Then take the cloth roller iron, when empty in position in the loom, and wind the roll up to the perforated roll, making certain that the cloth roll strikes the perforated roll on both ends with equal pressure. When this is done, wet the cloth roll just a little, but not enough to rust the cloth, and wind the cloth around the roll as tight as it will go. Start the loom, and if everything is done correctly, when the cut is woven it would be wound evenly at the ends.

Take the cut off, leaving the iron roll in, with a good sharp knife, with a 10 or 12 inch blade, cut down to three or four wraps on the iron roll all around. Then pull the roll out and cut through.

Care should be taken not to have too much power on the loom, as it will jar the loom and cause the cloth to wind unevenly.



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Spinning and weaving mills find there are important savings to be made through this system. Mr. J. M. Barnes of the Barnes Textile Service, at a meeting of the New Bedford Council said:

"By taking away from the expert operative those duties, it can readily be seen that she can do only the skilled work on more machines at higher wages and all the other duties can be performed by others with pay in proportion to the requisite skill. This is nothing more or less than putting into effect the methods which are proving successful in other industries."

What Mr. Barnes says of the weaver and his looms is also applicable to the spinner and his spinning frames. A study conducted by ourselves indicates that 15 per cent of spinners' time was chargeable to bobbin cleaning.

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If a man does not have the high roll take up, and the cloth goes from the reed to the roll over a breast beam, he can get some steel blades made about two inches long, with one end about a half inch wide, tapering off about to about ⅛-inch wide on the other end. Place the back of the blade in a thin block of hard wood and tack to the breast beam at the point where it is desired to cut the cloth, with the narrow end of the blade pointing to the loom reed. The reed should not be allowed to move from one side of the lay to the other. This will give a nice even cut.

Most all high roll take-ups have an iron roll at the back of the perforated roll. This is to give more surface for the cloth running on the perforated roll, so the cloth will not slip. The lay, when it is forward, comes very close to this roll. A piece of iron in the shape of a blunt cole chisel, with a screw hole on each side of it can be made, and this screwed to the front of the lay in the position wanted, and when the lay is full forward, the chisel can strike the iron roll, and as the cloth passes over this roll, it will be cut by the motion of the lay, and it will leave the filling mashed together so the warp will not ravel at the cut edge. This is the best way of the three by which the cloth can be cut. The work can also be done in the cloth room, but it will be more expensive.

P. T. S. (MAINE).

Preventing Long Chain Warps Rolling and Locking at Beamer.

EDITOR COTTON:

In reply to "CONTRIBUTOR NO. 4056" concerning long chain warps rolling or locking and giving trouble at the beamer, will say that I quite agree with "H. T. (GA.)" in his reply, appearing on page 173-R of the December number, in which he says that warping may have something to do with his troubles. But as all warps are made on the cross baller or the ball warper, that is, for dyeing and bleaching (I am ignoring beam dyeing and bleaching) and the majority are satisfactory, I think that "CONTRIBUTOR NO. 4056" would be well advised to watch his employees in the dyehouse and note their methods of working the warps.

I have noticed in some dyehouses a tendency to run the warps through the machines "haphazard". Even if a loose end or a piece of waste gathers up a few ends, this is allowed to go through the rollers, and when yarn is in a wet condition it is likely to stretch and mat. When this arrives at the beaming department, then the trouble begins. My idea is, that there are too many ends in each warp, or else, the dyehouse people are running too many warps through the machine in one chain, or what is termed doubling up to save time. This causes the warps to roll and split in going through the squeeze rollers; also, if the warps are doubled, then the warp has run off each shell at a different tension.

There is another suggestion I would make, and that is, to run all the warps from the driers into a collapsible truck, so that the warp is plaited and tied up, and not run back onto a shell. From my experience, this plaiting enables a beamer to run quicker,

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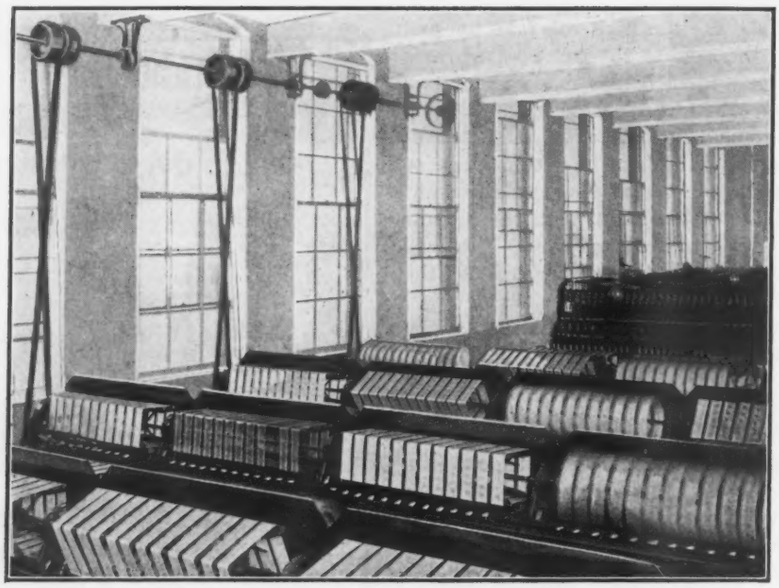

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and there is less likelihood of the warp rolling or locking in front of the comb. Or again, if he makes all of his warps in his own mill, I would suggest that he look over the left and right-hand screw of the traverse motion on the baller to see if this is not the cause. Sometimes the warp looks "raggy" at the edges through slipping, and worn parts will cause this. Making too many ends per warp will also cause rolling, and this again must be regulated according to the counts.

I would also suggest that he see that his cross-balls are not made too long, as some dyehouse foremen then double these by running through a machine with the same effect on tension as previously stated.

Sometimes it is necessary to split warps after drying, and this is one cause of rolling, if the warps are wet when split, and more so if they are made of plied yarns.

Only by careful checking up of these various operations can this contributor hope to correct the faults which he has enumerated, and I should like to hear again as to what progress he has made.

CONTRIBUTOR No. 4078.

Stopping Split Laps on Combers.

EDITOR COTTON:

As I have myself received helpful hints from COTTON, I would be obliged if you consider the following efforts on my part worthy of inserting in COTTON to help "CONTRIBUTOR No. 4049", who submitted a request for information to prevent split laps on Whitin combers.

Sliver Waste in Mixings. Too much soft sliver waste in mixing causes a tendency to give trouble at combers; 6 per cent of waste in mixings should not have been exceeded.

Racks. These should be tested for being level. My method of testing is to use two speeder frame spindles and place them over the shell rollers, one at each end and lower the racks with the lap spindle in position (but without the wooden block in) and adjust the racks so that the lap spindle rest on the spindles equally at each side of the shell roller. See that the wooden plugs of break leather are not worn through and catching on the pulley. See that the brake pulley is fast on the shaft; also the pulley wheel for lowering and lifting rack is fast on its shaft. See that the lap spindle nut is quite free in its socket in the rack. Some times a new nut is put on which is a bit tight for the socket on the rack, but it is forced on, and catches on the sides of the socket and retards the speed of the wooden block, especially after it is over one-fourth full and the speed becomes less.

New Lap Spindles. When these are fitted, I always have washers to slip on the spindle to go right up to the wheel handle end, starting with ½-inch or so thick, so that the worker does not require to put the screw of the spindle so far through to grip the wooden block, thus saving time as well as screws. As the screw wears, the ½-inch washer is replaced by one ⅜-inch thick, later one ¼-inch thick, until it is not necessary to use any. The thickness of the washer depends on the length of the screw. I just give sufficient

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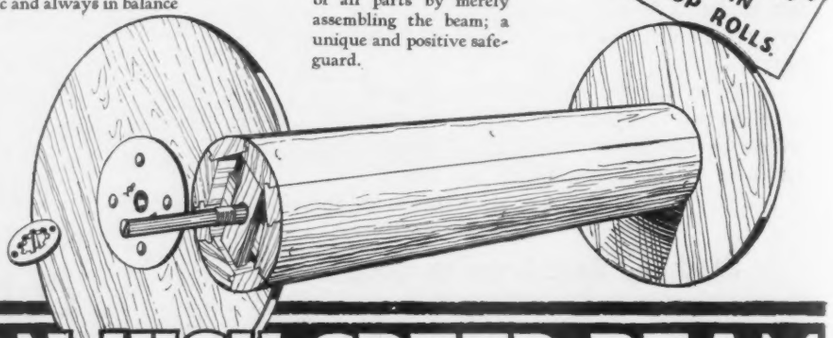

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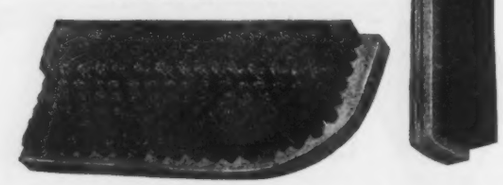

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screw to have a full nut.

Wooden Blocks. See that they are not too big for the lap spindle, and if too tight between the rack plates, cut three or four pieces of leather belt laces about 1-inch in length and tuck them on the blocks where they catch on the plates.

The rack should not be weighted too much.

Size of Blocks. Do not over-run the blocks as when they get over the lap plates they become soft.

The foregoing points also apply to the sliver lap machines, as if the lap is bad there, it does not help at the later processes.

Sliver Lap Drafts. About 1.8 is a good total draft. It is important to watch the draft between the calendar rollers and the front drawing roller. I find about .96 to .98 gives best results.

Top Drawing Leather Rollers. Always see that the leather rollers on the lap machines are in perfect condition. On the ribbon lap machines where there is no mechanical weight relieving motion for the top leather rollers fitted also for the comber drawbox rollers, an easy method of relieving the weight off those rollers at week-ends or holiday stoppages is to use pieces of wood say ⅜-inch square, and about 10 inches long, tapered at the point so as to enter between the leather rollers, and both steel rollers. The worker at the stopping time puts one in at each end of the roller between the top and bottom rollers and thus lifts it off of the roller, and after stoppage pulls them out again.

R. R. (SCOTLAND).

Heavier Squeeze Rolls for Slashers.

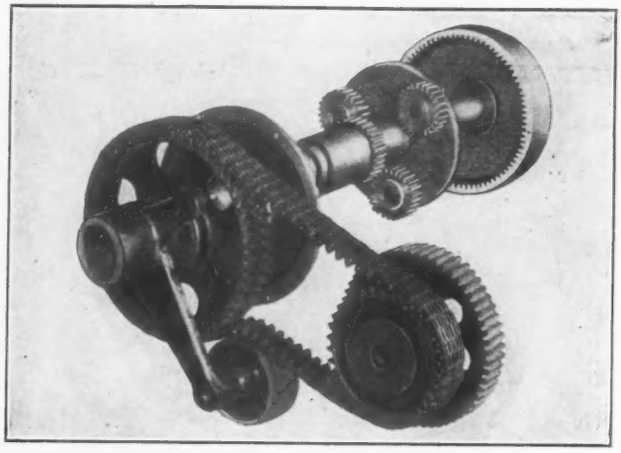
EDITOR COTTON:

I will try to answer "CONTRIBUTOR NO. 4084", who wants to know the proper weight for squeeze rolls on the slasher size box. He says his present rolls weigh 285 pounds.

I believe these rolls are too light, and at the same time I will venture the statement that the weight of the rolls does not make a great deal of difference so long as they are heavy enough to squeeze the surplus siz off the yarn and prevent it from going through to the cylinder in flakes. I prefer rolls that weigh 500 pounds.

There are numbers of things that enter into the making of good warps, which are of vastly more importance than the weight of the squeeze rolls. Chief among them is the jacket that goes on the roll. I once got it into my head that the very highest grade of slasher cloth that I could buy would give the best results in the weave room. After filling the weave room full of these warps made with the high grade cloth, I discovered that there was a nigger in the woodpile, and after hunting and worrying for several weeks, I finally traced the trouble to the slasher cloth.

There are on the market some sizing compounds, and then some more; some are good and some are not so good. But there is one, somewhere, that will suit the mill's conditions, and the important thing is finding just what is needed—and, when it is found, sticking to it. I have done a lot of experimenting with sizing compounds and slasher cloths, placing someone



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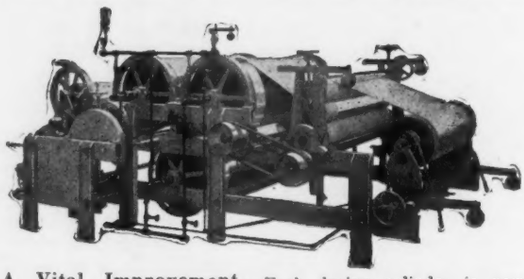

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in the weave room on a given number of looms to check up on these tests until I found what seemed to be the best for our needs. Then when we did arrive at that point and stayed there, our troubles were over. These tests are a lot of trouble and some expense, but they are worth it, if properly carried out.

CONTRIBUTOR No. 4090.

Avoiding Double Picks and Snarled Ends.

EDITOR COTTON:

I am listing below some of the things which I have found to cause double changing on a loom. This is in answer to "CONTRIBUTOR No. 4127", who asked recently how to avoid double picks and snarled ends of filling coming in the cloth at the transfer of the quill, on automatic looms without feelers. Some of these causes are:

Loom picking late, causing shuttle to be late arriving at the changing point. Slack or light belt. Top holder with too much tension, causing filling to break on the change. Small end disc closed up too much, putting too much tension on bobbin when changing. Lay not properly adjusted under battery, causing bobbin to roll either in back or front of shuttle when changing.

Filling motion out of proper time, causing loom to fail to change. Batteries not properly threaded up —that is, the thread from the bobbin to the thread holder not having the proper slant. Batteries not revolving properly when a bobbin is transferred from them to the shuttle. Thread cutters not working properly. Weavers not winding the yarn from the butt of the bobbin—caused by bearing traverse down—before putting in the battery.

Loose shuttle springs. Shuttle springs not holding bobbin in proper alignment in shuttle. Shuttle eyes hard to thread. Shuttle eyes becoming unthreaded while running. Bad start-ups in the spinning room. Shuttle feelers setting late on filling motion shaft, causing latch to rebound and not transfer. Swords loose on rocker shaft, also rocker collars and parallels. Harness not properly timed or adjusted. Shuttle feelers set too early on filling motion shaft. Shuttles not properly boxed.

CONTRIBUTOR No. 4147.

EDITOR COTTON:

In reply to the question of "CONTRIBUTOR No. 4127", who is having trouble with double picks and bunches of filling in his cloth.

The filling feeler is about the only thing that will eliminate this trouble, but as he has no feelers, he will have to do the next best thing. I think that from my own experience the following advice will help him.

Get full cooperation from the boss spinner; he can help a great deal by producing good filling. The doffing of filling has a great deal to do with how it runs in the looms. Have the battery hands pull all loose ends off the bottom of the quills when they place them in the loom magazines.

I would suggest that he run two hair brushes in his shuttles, with the added friction on the yarn, it will help a great deal in straightening out the last of

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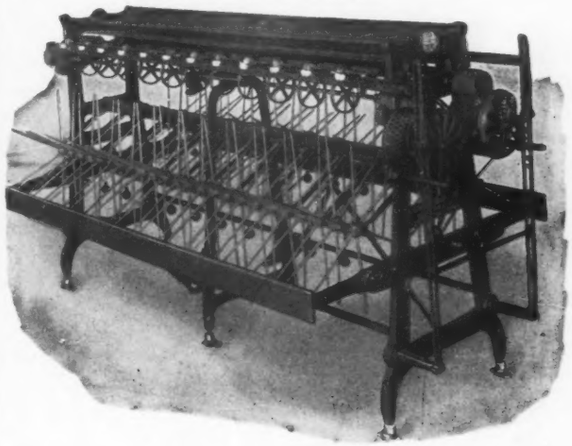

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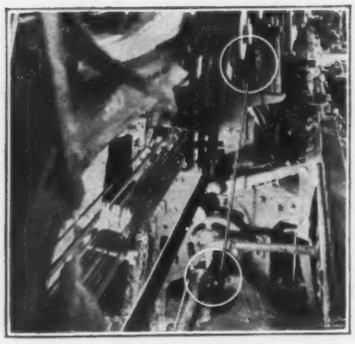
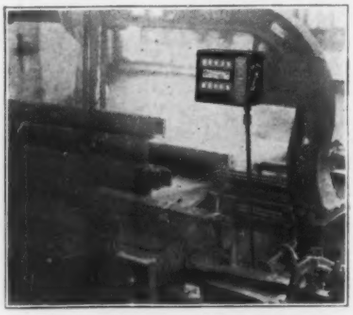
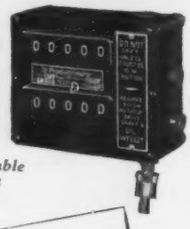


Productimeter Pick Counter applied to Stafford Loom in a large cotton mill.



Productimeter Double Deck Loom Pick Counter on a well known loom, showing cam shaft drive with connecting rod as desired for efficient operation.



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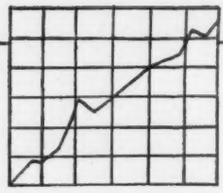
This Book describes completely the Pick Method of Weaver Wage Payment. It contains complete tables and forms for applying the Pick Method to your mill. Write for a copy.

The Pick Method Sets New Peaks of Production



by providing - Incentive to Weavers - -

THE Pick Method of wage payment with Productimeter Pick Counters provides a decided incentive to weavers to increase individual production. The counters show an immediate, visual record of production and, indirectly, money earned; the weaver is naturally stirred to excel his own and other records. You benefit by increased production all along the line. The Pick Method by tallying exactly individual loom production, makes it easy to check up on lagging looms or decreasing production on any loom and correct the cause, whatever it may be. Besides these important advantages the Pick Method ends all guessing and estimating in calculating wage payments; readings from Pick Counters are the mechanically accurate basis upon which such payments can be quickly determined.

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Productimeters

THE SPEEDOMETERS OF INDUSTRY

the filling as it leaves the bottom of the quill.

Double picks are caused by two or more bobbins being transferred at the same time. See that the shuttle boxes at the battery end of the loom are in good shape. Make use of the check straps; do not check the shuttle with a tight shuttle box. Keep the shuttle springs tight with the bobbin in the center of the shuttle. Run the looms with as little power as possible, and do not have a harsh pick.

P. T. S. (MAINE).

EDITOR COTTON:

Referring to the question about preventing double picks and snarled ends of filling coming in the cloth at the transfer of the quill, without feelers.

I have talked to several old weavers and loom fixers about this question, and in every instance the answer has been to the effect that it is entirely impossible to prevent double picks, as well as snarled ends of filling coming in the cloth at the transfer of the quill, without feelers. If the filling happens to run out just as the shuttle starts to travel back towards the battery side of the loom, there is no way to prevent a double pick on the next pick.

It is, of course, possible to have the loom stop each time a new quill is thrown in, but I take it that "CONTRIBUTOR NO. 4127" would not be interested in this method since it would cut down production and add to the weaving expense.

T. T. (TENN.)

Some Thoughts on Cooperation.

EDITOR COTTON:

Cooperation is the balance wheel that makes any and all kinds of undertakings function smoothly. The first thing to be installed in a business of any kind should be a first-class system of cooperation, seeing to it that it stays installed. Upon it depends the success of business, and without it business would fail.

Cooperation is not an experiment. It has been tried, and proven to be the key which has unlocked the door to all successful undertakings, and it is a thing which it is impossible to use to excess; like the Bible, in a way. It has never been used enough. If one is not using cooperation he is abusing it, and why abuse the best thing that God has bestowed with which to fight life's battles, a thing which can be applied to anything, anywhere and at any time? Think it over. Nothing more useful will ever be found, and nothing as cheap as cooperation. There is nothing which will be so helpful in speeding up the wheels of industry, but will slow them up just as quickly if not put into practice. Success in the business world can only be obtained by cooperation. Cooperation and positive kindness is the tonic needed to tone up any kind of business. Positive kindness, cooperation and a little capital makes a wonderful blend in helping the poorest business to thrive, meaning to the business what milk means to babies; what a balance wheel means to a watch; what every beat of the human heart means to man. In other words, the pulse of the business, and as long as that pulse beats, there is hope, but when it ceases beating, the business is dead. Think it over.

J. T. D. (MISS.)

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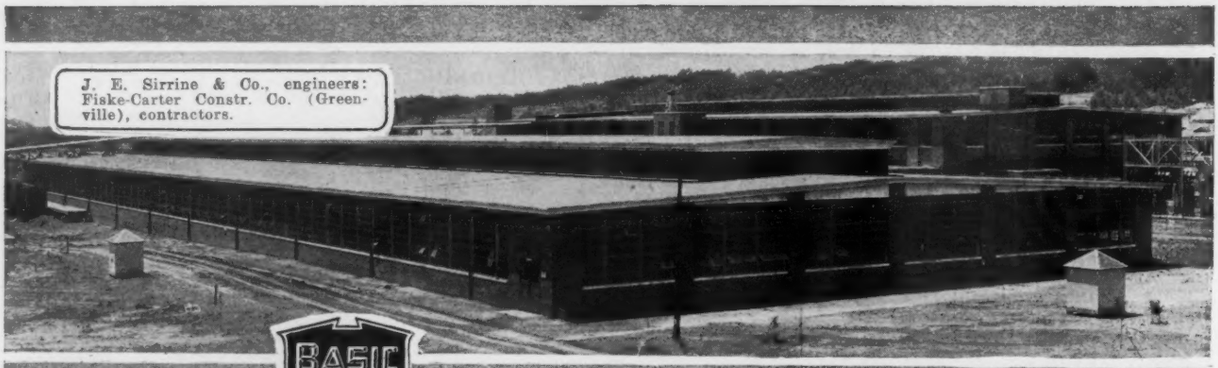

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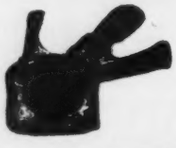

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Figuring Average Weave Room Production.

EDITOR COTTON:

I will explain in this letter our method for figuring the average production or efficiency of a weave room running on several different styles of cloth, and with a variable number of looms on each style. This is in response to a question which appeared in your discussion department.

The accompanying form is one we have used and which we find gives satisfactory results. It will be noticed from this form that the *average* efficiency has no relation to the column headed "efficiency". This last column refers only to the efficiency of the number of looms which are running on the style listed on that horizontal line, and it should always be borne in mind that an *average* of averages means nothing in figuring productions. The only correct way to figure the average production of a weave room is to take a total

Style Number	Looms Run	Yards Produced	100% Production Yards	"Efficiency" Per Cent
1	24	6,034	5,486	110
2	116	19,550	21,250	92
3	48	9,589	9,785	98
4	254	62,570	66,564	94
5	158	44,859	48,236	93
TOTALS		142,602	151,321	

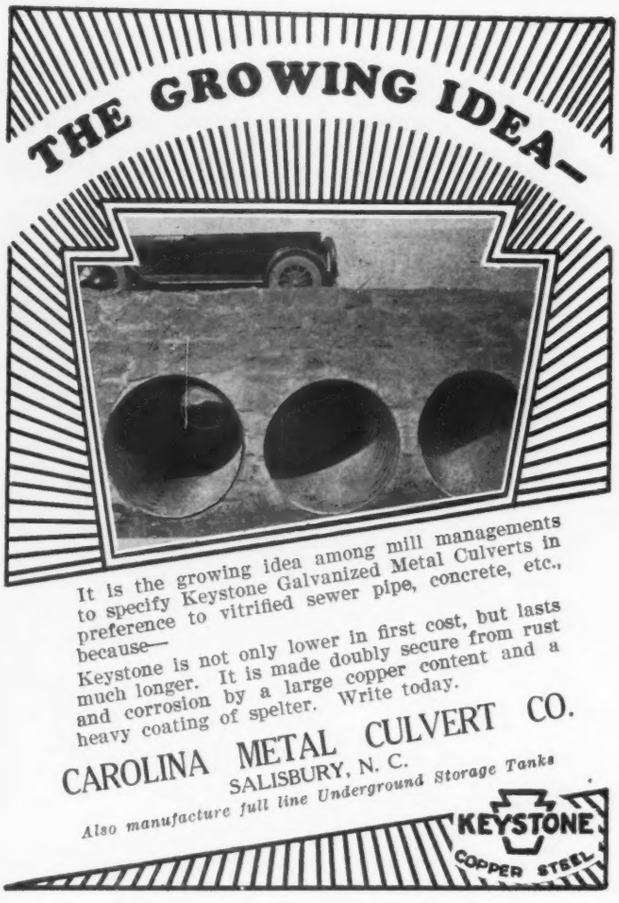
Average Efficiency = 142,602 ÷ 151,321 = 94.23 per cent.

of the number of yards or cuts produced on the total number of looms and divide by the number of yards or cuts which would be produced if the looms were running continuously.

Referring to the accompanying form, it will be noticed that the total of 600 looms, which were run for the week in question, produced a total of 142,602 yards. If all of these looms had been running continuously for the week, a total of 151,321 yards would have been produced in the entire room. Therefore, dividing 142,602 by 151,321, we get .9423 or an average efficiency of 94.23 per cent.

If an attempt were made to get this average efficiency by adding up the efficiency of each style as given in percentage and dividing by the number of styles running, the result in this case would be 97.4 per cent, which is, of course, incorrect. The only information which can be derived from the "Efficiency" column is in keeping track of the running qualities of the different styles.

In figuring the efficiency of any one style, it is always well to take an average of several weeks. Referring to Style No. 1 on the form, we observe that on 24 looms an efficiency of 110 per cent was obtained, which is of course impossible. If the records of this style are looked up for the previous week, however, and are followed over into the next week, it will be seen that the production efficiency for those two weeks will be considerably less. The explanation is in the way in which the cut marks come up on the looms. In this Style No. 1, it probably happened that on several of the looms a fairly large roll was carried over from one week to the next, and that during this week


THE GROWING IDEA—
It is the growing idea among mill managements to specify Keystone Galvanized Metal Culverts in preference to vitrified sewer pipe, concrete, etc., because—
Keystone is not only lower in first cost, but lasts much longer. It is made doubly secure from rust and corrosion by a large copper content and a heavy coating of spelter. Write today.
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COPPER STEEL

COSTS IN TEXTILE MILLS

Recent widespread analysis of cloth manufacturing costs shows that if any *one* of several regular expense items are out of line the mill "goes into the red."

Large foreign markets are available to the mill that figures its costs closely enough to meet the special requirements of this trade.

Ask our representative to demonstrate the recording machines used to control machine production level and to assemble cost details.

OHMER

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in question the cloth which was cut off of the loom included yardage which was really woven during the preceding week. For this reason it can readily be seen that in getting the average production of *any one style*, a period of several weeks should be taken so as to account for the carry-over of cloth on the looms from one week to the next.

B. S. (GA.)

Dyeing Raw Stock Cotton.

(*Continued from page* 616.)

dyeing combination shades, dyes which are reduced and dyed at the same, or approximately the same, temperature should be used.

The amounts of caustic and hydro used for reduction should be carefully regulated. Too much hydro makes the color hard to oxidize, tending to make it come up uneven, while too little will not completely reduce the dye and it will not stay in solution. Too much caustic retards the exhaustion, while too little will not dissolve the dye completely. The correct amount of caustic is that which will just color phenolphthalein paper pink. After a little experience, the dyer can usually tell when the dye is properly reduced by the color of the reduction solution. Light shades require more caustic and hydro proportionately than heavy shades. The amounts are determined more by the volume of the bath, that is by the concentration, than by the amount of dye.

The closed type of raw stock machine is best suited for the dyeing of vat colors due to the fact that there is less contact with the air than in the open type; consequently, the bath is less likely to become oxidized during the dyeing process. Also, the closed machine may have an air line connected and the batch oxidized by blowing. This eliminates the danger of the reduced dyestuff being stripped off the fiber before it has a chance to become fixed, as sometimes happens when the machine is refilled after the batch has been drained. After the blowing, perborate or chrome should be used to make sure that the oxidation is complete. Vat black requires a special after-treatment with chemic (1½ degrees Twaddle), after which it is washed and soaped.

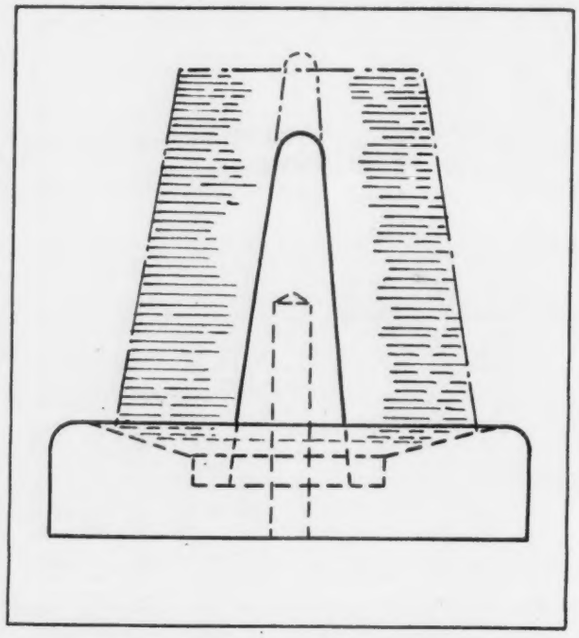
In the dyeing of vat colors, as indeed in any form of dyeing, attention to details is necessary. Such factors as temperatures, dyeing times, amounts of dyes and chemicals as well as their quality and strength, should be carefully watched in order to do good work and obtain consistent results.

Clemson College Gets Spray Printing Outfit.

The Textile Department of Clemson College, at Clemson College, S. C., has recently installed a Simons spray printing outfit, used in all types of spray printing on textiles. This process, it is stated, offers possibilities in America for piece goods as well as for the production of printed garments, draperies, printed velvets, etc., and should be particularly interesting to the smaller mills where the usual printing equipment might not be practicable. Professor Charles E. Mullin, who studied this work in Europe, will supervise the investigational work with this equipment. The school recently installed also a Permutit zeolite water softening system.

Silk and Rayon Cone Holder

Knitting mills using silk and rayon on cones are familiar with the difficulty of having the yarn catch under the cone. Many different methods have been devised to prevent this, including the setting of the cones of yarn in pans of rice or beans, stretching hose over pans or boxes on which to set the cones of yarn, etc. The accompanying sketch illustrates a new cone



holder for silk and rayon, for use on knitting machines, which has been invented by W. N. King, vice-president and treasurer, Texwood Manufacturing & Sales Co., Inc., Greenville, S. C. The sketch is self-explanatory. The holder is set over the regular pin on the knitting machine and requires no fastening. As the full cone of silk rests on the holder, the outer bottom edge rests against the base of the holder, leaving no chance for the yarn to fly under the cone. As the yarn is unwound, the cone settles down to hold the same relative position. The entire holder is made of hardwood, highly polished, so as not to catch the yarn, and to permit ready cleaning if necessary.

Plans for Textile Exposition in 1930.

The Ninth Southern Textile Exposition will be held in Textile Hall, Greenville, S. C., in October of 1930, it has been announced by William G. Sirrine, president of the organization. More than 100 applications have been received for space. The prospectus for the show will be issued in the early fall of 1929. It is announced that so many exhibitors have applied for their previous locations, that little change will be made in the diagram of space on the first floor, but on the second floor the layout will be modified. Some changes may also be made in the North end of the hall to obtain a more extensive use of the balcony. The existing annexes will also be used.

Sipp Machine Company Announces British Representatives.

Sipp Machine Company, Paterson, N. J., have announced the appointment of The Textile Accessories, Ltd., Manchester, England, to handle their complete line of silk and rayon machinery in Great Britain and Europe.

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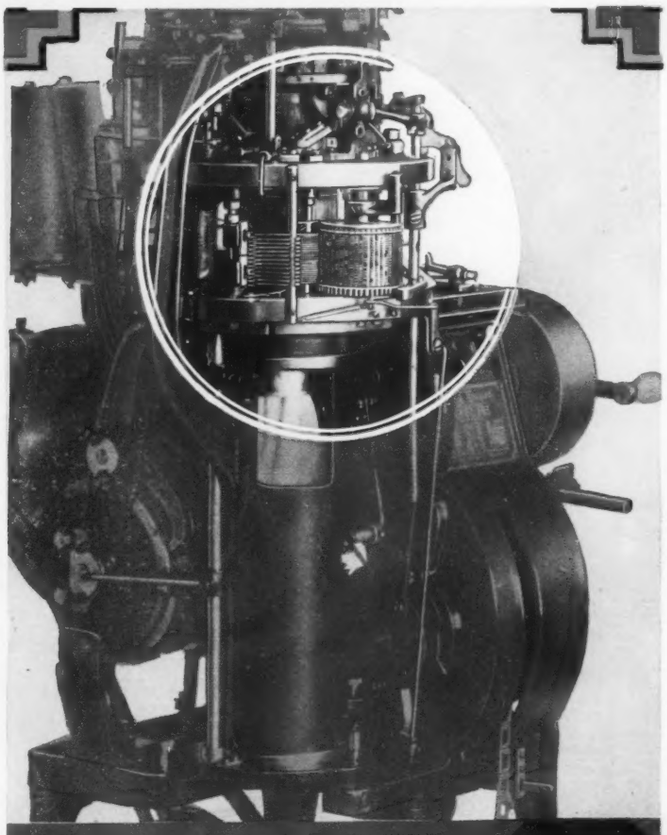

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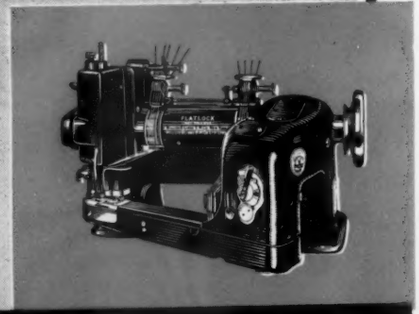

Knitting Arts Exhibition
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THE FLATLOCK

The Seam that Circles the Globe

Problems *in* Manufacturing *FULL FASHIONED HOSIERY*

By C. H. Baxter

Article 5.—Cutting of Fabric, Breaking of Needles, and Narrowing Trouble

IN THE manufacturing of full-fashioned hosiery, there are three problems that arise almost daily on certain knitting machines, namely; the *cutting of fabric*, the *breaking of needles* and *narrowing trouble*. In the majority of cases, minor adjustments will rectify the trouble, but at times the minor adjustments do not rectify the trouble and then it is necessary to study the problem thoroughly and make adjustments accordingly.

Cutting of Fabric.

Let us first take the problem of cuts in the fabric during the knitting operation. The cutting of fabric is caused by many things, so that when a fixer is called to a knitting machine to stop cutting, it is necessary to find out the cause and then make adjustments accordingly. When cutting of fabric occurs on a knitting machine, the first thing to determine is whether it is the fault of the silk used. Many problems of cutting are due to the silk, so there is where one should look first for the trouble. The silk may not have been soaked properly and the result is that it sticks to the cone, or else the gum strips off and this will invariably cause cutting. If silk has been in a damp condition too long and is too hard on the cones, it will result in cuts in the fabric because the silk on hard cones will stick when it leaves the cone and cause the silk to drag when the carrier takes the silk across the sinkers.

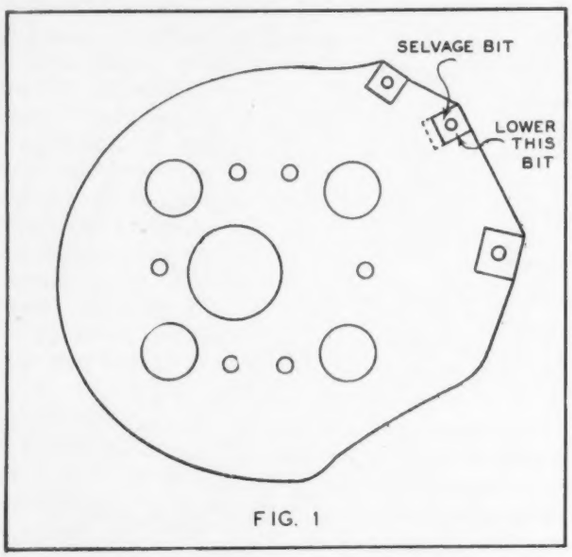


FIG. 1. NEEDLE BAR CAM DRAWING.

Should one find the trouble is not in the silk, then examine the needles and sinkers to see if they are rough or in a gummed-up condition. To make a test to find out if this condition exists, first turn the machine by hand and watch the silk thread as it runs off the sinkers. If certain sinkers seem to be holding back the silk as if there were rough places in the sinkers, it will show that the sinkers are gummed up and it is then necessary to clean and polish the sinkers. To determine if the needles are rough, throw out one needle bar and then pull the fabric up and down on the needles. If the fabric sticks to the needles, then one can rest assured that the needles need polishing.

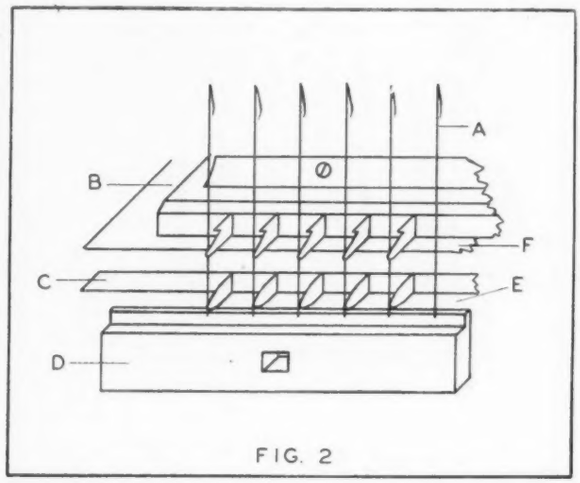


FIG. 2. SHOWING NEEDLE IN CENTER BETWEEN SINKERS AND KNOCKING-OVER BITS.
A, Needles. B, Sinker Head. C, Knocking-Over Bit Head. D, Needle Bar. E, Knocking-Over Bits. F, Sinker and Dividers.
Note that needle is in the center between each two sinkers, and each two knocking-over bits.

Polishing Needles and Sinkers.

There are many methods used for polishing of needles and sinkers, and one of them is using so-called nickel polish. My experience has taught me that using nickel polish is not the proper thing, as most nickel polishers contain acid, and while they will polish the needles, the acid seems to affect the steel, and in a day or so after polishing, the needles are rougher

than before. The best method I know for polishing sinkers and needles is using machine oil and a very small quantity of powdered soapstone.

For mills that have a large number of machines, I would recommend that a motor, with a flexible shaft on which a round brush is attached, be used for polishing. This saves considerable time in polishing, as with this apparatus a 20-section machine can usually be polished thoroughly in about thirty minutes. However, where no such apparatus is available, an ordinary tooth brush can be used for polishing. Polishing needles and sinkers is merely a scrubbing method and all that anyone must do is to put some machine oil and a little powdered soapstone on the brush and then run or brush the needles and sinkers. There is one thing, however, that must be done after polishing, and that is, to pour gasoline in the sinker heads, so that all the powdered soapstone is washed out of the heads.

When cutting occurs in one place along the entire stocking, the cause is usually one single sinker that is

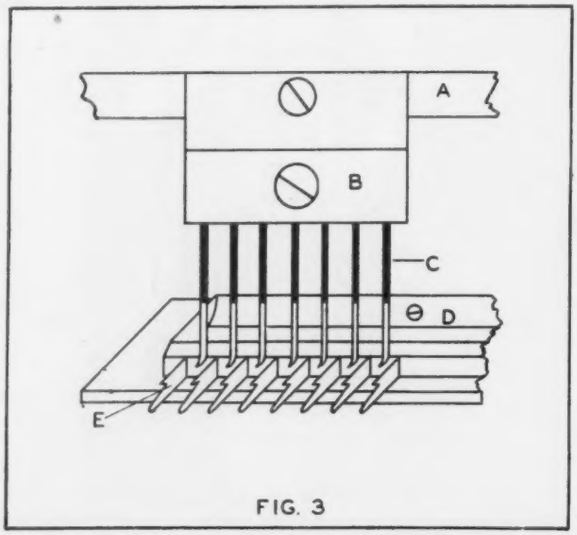


FIG. 3. DRAWING OF NARROWING FINGER SETTING. A, Narrowing Rod. B, Narrowing Finger. C, Narrowing Points. D, Sinker Head. E, Sinkers.

nicked or rough or the needle is rough or nicked. By taking out the sinker or needle, the cutting usually stops.

Maybe It's the Catch-Bar.

Another cause for cutting one place along the entire stocking is, that the catch-bar is what is called "on too hard," and the result is that any roughness whatsoever, especially in the throat of the sinkers and dividers, will cause cutting. It is better, therefore, at times to adjust the catch-bar rather than take out numerous sinkers and dividers.

Cutting Along the Selvage.

The most common cutting on a knitting machine is cutting along the selvage. In most cases the cause for this is that the needle bar is too low or that the knocking-over bit is too high. When cutting is caused by the needle bar or knocking-over bit, it is better to lower the knocking-over bit whenever possible, as raising the needle bar will sometimes disturb the narrowing setting and result in narrowing trouble.

Occasionally a fixer is called to a machine because of cutting or making holes in the inside of the fashioning mark, or notch, as some call it. This is a rare case of cutting, but to many, it is what is called a sticker, because it so seldom occurs that the average fixer does not have a chance to learn what causes this. When this occurs, the cause, as a rule, is due to the narrowing cam being set too late. By setting the narrowing cam 1/32-inch sooner, this cutting will stop.

In making cotton sole and toe style numbers on a footing machine, cutting sometimes occurs in the so-called split of the sole or where the cotton and silk are joined together in the sole. At this point the cotton and silk is knitted together, and the result is that the fabric is too heavy at this point. By adjusting the rocker cams so that the stitch is made looser, it will sometimes overcome cutting at this point. By slightly pushing back four needles at this point so that the stitch is made looser, it will also stop cutting. Tight selvage at this point will at times cause cutting, and this can be overcome by lowering the selvage bit on the needle bar cam as shown in the drawing, Fig. 1, herewith.

Needles Breaking.

Needle breaking is probably one of the most troublesome and costly things that can happen to a full-fashioned knitting machine. Excessive needle breakage causes loss of production, increases menders, which mean a greater percentage of seconds, and increases waste. Before going into this matter, I might say that every full-fashioned hosiery manufacturer should keep a record of the number of needles given to each operator of a knitting machine. The foreman or fixer of a knitting department should constantly watch this record, and whenever the record shows that an operator is using too many needles, the cause for this should immediately be investigated.

Like many other things in connection with trouble on a full-fashioned hosiery machine, the excessive breakage of needles is due to many causes that must be rectified to overcome the breakage.

The most common cause for excessive breakage of needles is that the needles are out of alignment, usually the result of not being properly pliered by the operator. It is almost impossible to set a machine to function properly at all points, when the needles in the machine look like what I always call "a crooked picket fence". Where needles are out of alignment, it is folly to make any adjustments until the needles have been properly pliered.

When one finds that a knitting machine where the needles are what is called reasonably straight is breaking too many needles, then it is necessary to find out what might cause such a breakage.

Whenever the breakage of needles occurs in one or two heads on a machine, the cause for such breakage is usually due to the sinker head or knocking-over bit plate being out of center. The setting of a

sinker head is that each needle in a needle bar must be absolutely in the center of each sinker and divider space. The setting of the knocking-over bit must also be such that the needles enter the knocking-over bits in the center between two knocking-over bits. The drawing in Fig. 2 will explain how sinker heads and knocking-over bit plates should be set.

Whenever needle breakage is occurring in the narrowings, especially in the toe narrowings on a footer, the sinker head or knocking-over bit plate out of center will cause breakage of needles while narrowing. Another cause for breakage of needles in the narrowings is that certain narrowing points in a narrowing point finger are out of alignment and the result is that the needle beard does not enter into the groove of the narrowing point and will invariably break off the needle beard. The setting of a narrowing finger is such that the sinker should be in the center of two points as shown in Fig. 3.

Another cause for breakage of needles in the narrowings is that the narrowing machine is too high or too low. While it is advisable to set the height of a narrowing by gauge, if such a gauge cannot be secured, the following test can be made to determine the correct height of a narrowing machine.

First, stop the machine just as it is ready to make a narrowing and turn the machine to the point where the tips of the narrowing points are just touching the top of the needles. Then look at each needle bar on the whole machine and see if it is not possible that at some sections of the machine the narrowing machine is higher or lower than at other sections of the machine. If such is the case, see that the narrowing machine is raised or lowered at the points where it appears to be off in height, so that the entire narrowing machine is level, as far as height is concerned. After this has been done, it is necessary to find out if the narrowing machine is too high or too low in making a narrowing. To make this test, take a needle and break off the top at a point between the end of the beard and the end of the groove. The breaking should be done in the center between these two points. Then place this needle in one of the needle bars and turn the machine so that the narrowing machine is down to the lowest point in narrowing. The tip of the narrowing point should just touch the top of the broken needle, and if it does not touch the top, the narrowing machine is too high, and if it goes beyond the top, the narrowing machine is too low. The drawing in Fig. 4 will show how these tests should be made.

Another cause for breaking of needles in the narrowings is that the narrowing cam is set too soon, and by setting the narrowing cam so that it is a little later, this will stop the breakage of needles.

Needle breakage at the selvage can be caused by the carriers not being set properly, especially if a carrier is set too low, or in other words, too far down into the sinkers. If the needles break in the selvage while narrowing, especially in the toe narrowing and the carriers are set properly, the trouble may lie in the presser cam setting. By setting the presser cam so that it is a little later in motion, it will sometimes stop the breaking of needles at the selvage.

In footing full-fashioned hosiery, the breakage of needles is greatest in the transfer operation and starting up after the leg has been transferred onto the needles of a footing machine. Bad points in transfer bars cause many broken needles and the transfer bars should always be kept in perfect condition by the operator of a footing machine. Poor creasing of the heel will also cause broken needles. Bad selvages in the inside of the heel make it difficult for a heel to be transferred properly on a footing machine and will cause needles to break.

In starting up a footing machine, after the leg has been transferred, many times needles will break because the needle did not press off the heavy wale stitch of the heel. This can be overcome a great deal

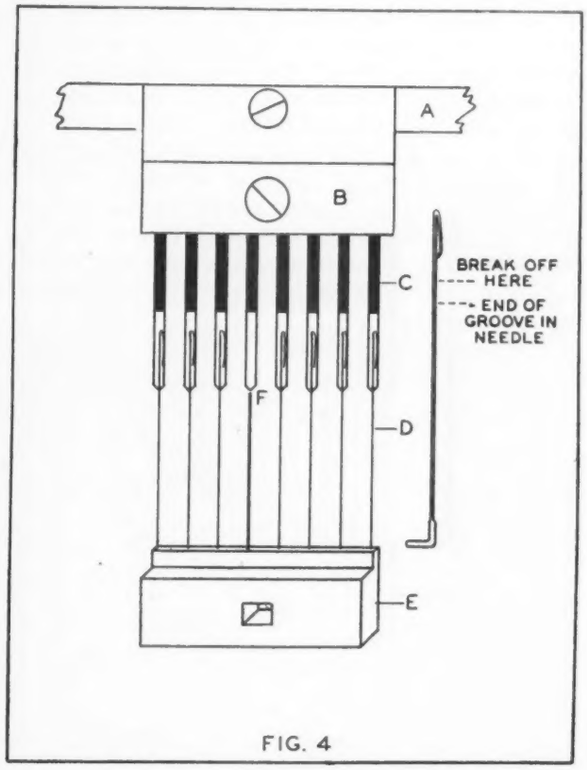


FIG. 4

FIG. 4. HOW TO TEST NARROWING MACHINE WITH BROKEN NEEDLE.

A, Narrowing Rod. B, Narrowing Finger. C, Narrowing Points. D, Needles. E, Needle Bar. F, Broken Needle Showing Where Point Should Meet Needle in Needle Groove.

by putting on more press so that the needle will press off the stitch on the first course. In putting on more press, it is better to raise the bit on the presser cam, as sometimes if more press is put on by adjustment of the rollers it will disturb the motion of the needle bar and cause trouble elsewhere. Another way to stop breakage of needles on the first course is to run the machine very slow for two or three courses. When very heavy heels are made, the footer can avoid many broken needles if on the first course he will lower the slacker to make a loose stitch, raising the slacker only when going through the instep of the foot. A footer must help himself as far as needle breakage on the first course is concerned and if he will watch his transfer bars and go easy with the speed of the machine

for a few courses, after starting the knitting of the foot, the breakage of needles will be greatly reduced.

Narrowing Troubles.

Narrowing trouble is something that is up to the operator to avoid, as most narrowing trouble can be traced to the poor condition of narrowing points and needles. There are times, however, that drop stitches in the narrowings are caused because of the machine being out of adjustment. The proper height of the narrowing machine is necessary to prevent drop stitches in the narrowings and the same test of breaking a needle can be used for determining if the narrowing machine is set properly for the narrowing operation.

Sometimes one will find a machine, especially a footing machine, that does not take the stitch off the needles when narrowing at the point where the narrowing point is ready to rack in two needles to deliver the stitch back to the needles. When one finds that the stitch still remains on the needle, the cause is that the needle bar is too high, and by lowering the needle bar slightly, this trouble will stop. If sinker heads or knocking-over bit heads are out of center of the needles, this also will cause narrowing trouble. In the footing machine, narrowing trouble sometimes occurs in dropping the stitch when the big and small narrowing finger come together. The improper height of the narrowing machine will cause this. If the narrowing machine setting is all right, then taking off or putting on a little more press will sometimes stop this trouble. However, in most cases, where this trouble occurs, it is caused by the toe of the foot being knitted too tight and all that is necessary is to loosen up the toe, and this trouble will stop.

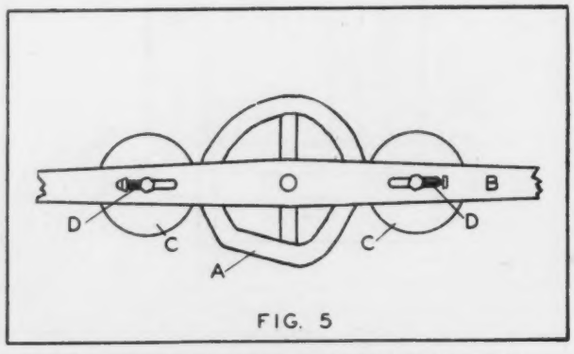


FIG. 5

FIG. 5. DRAW ARM AND ROLLER DRAWING.
A, Draw Cam. B, Draw Arm. C, Draw Rollers. D, Adjusting Screws.

Adjusting Rocker and Rocker Cam.

In closing this article, which will be the last one on knitting machinery, I want to write on the proper adjustment of the rocker and rocker cam. Many times I have seen good silk hosiery spoiled in appearance because the rocker had not been adjusted properly. In making the splicing in the leg or the sole in the foot, the rocker should be adjusted so that the rocker roller will leave the rocker cam just as the sinkers enter the inside selvage stitch of the splicing or sole. If the rocker goes beyond this point, it means a loose stitch until the roller leaves the cam and causes the silk instep of the leg and foot to have a loose or sleazy appearance. There are times, however, when one cannot seem to set the rollers so that they will operate properly at all points of the inside selvage. When this occurs, it is because the draw has not been set properly or that the machine is not centralized. The best method to find out if the draw is set properly is to draw a course and count how many sinkers must still be pushed out by the slur cocks as the catch bar comes forward. Then draw another course to the other side and see how many sinkers must still be pushed out. Both sides should show the same number of sinkers and if more sinkers are being pushed out on one side and less on the other side, then the draw is not set evenly.

By centralizing is meant setting the rollers on the draw arm that operate the slur cocks. There are two rollers on each side of the draw cam. There is a small set screw on the stud holding these rollers and on these rollers and on these set screws, is where the adjusting is done for centralizing.

To find out if the machine is in center, first turn the machine slowly until three sinkers have been pushed out of the sinker head at the one end. Then take a cam gauge and place it on any needle bar cam and make a mark on the cam. Then draw a course and set the machine on the other side so that three sinkers are pushed out. Then again take the cam gauge, and if the machine is center, the gauge should be on the same mark on the cam. If not, then it is necessary to set the rollers either a little further to the right, or a little further to the left, and at each setting of the rollers, make this test until the gauge shows that it is on the mark on the cam on either side of a course. The drawing in Fig. 5 will show the adjusting screws on the rollers.

The centralizing of a machine is very important, as many times a machine out of center will make poor fabric, as well as not being able to adjust the rocker rolls and cams.

This will complete my articles on knitting machines, and in my next article I will take up the problems that arise on looping and seaming machines.

This article continues Mr. Baxter's discussion of problems involved in full-fashioned hosiery manufacturing. The four which have appeared previously, in November and December 1928, and February and March of this year, covered the lay-out of a full-fashioned mill, sleazy knitting, winding problems, cloudy fabric, sinker and needle lines, selvages, plaiting, etc. The present discussion covers fabric cutting, needles breaking, narrowing troubles, etc. The next article will discuss looping and seaming problems.—The Editor.

Making the Dyeing "*Like Sample*"

How to Look for Dyestuffs that will Produce Large Scale Results Similar to Those Secured in Trial Samples

By Noel D. White

Article Nineteen of a Series on "The A B C of Dyeing"

WHEN the dyer has made a selection of dyestuffs, tested them in his laboratory to see that they are well qualified for his work, has combined them with one another to match his shades and is prepared to use the dyes in his vats and machines, he has yet to learn if they will give good and satisfactory results on a large scale dyeing as they did in trial samples.

Before deciding definitely on a dyestuff, it is well to give a thorough trial on some regular lots; a dye may work well on a piece of material dyed in a beaker; but, when used in a machine, may not work so well. It may go on too fast and produce unevenly dyed goods, or it may not penetrate easy. It may be affected by metals and produce in the machine a different shade from that obtained in the laboratory.

Usually when a dyestuff is known to be affected by metals, like the sulphur, vats, and chrome dyes, this fact is made known by the manufacturer, and the dyer is accordingly prepared to handle such dyes in the proper manner. For instance, sulphur colors which are known to be affected by copper and Monel metal are dyed in wood or iron vessels, and on those chrome colors which are known to be affected by metals, before using them in copper or monel metal vats or machines, the metal is made impervious to the action of the dyestuff by using a buffer solution to coat the metal before the dyestuff is entered. In this latter case, one per cent sulphocyanide or ammonium added to the bath at the start will, in fifteen to twenty minutes, render the metal innocuous to the dyestuffs and the dyeing may be carried on in safety.

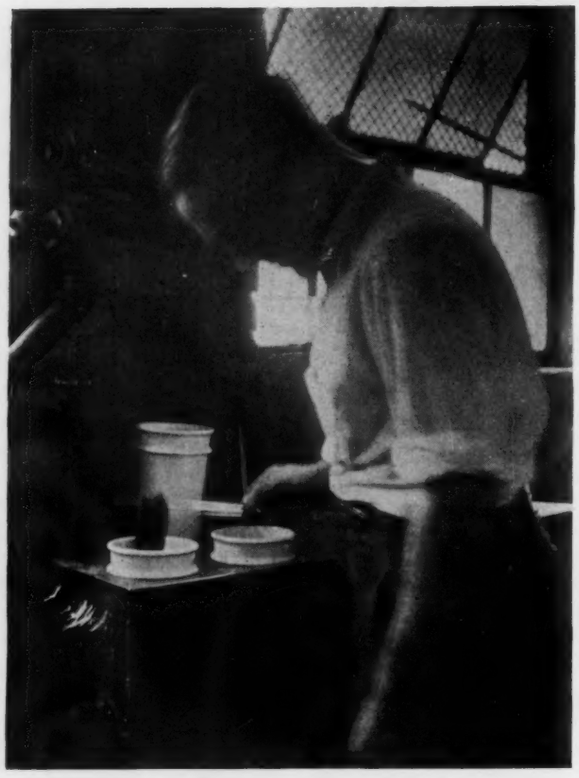
In dyeing hosiery it is always best to select dyes that exhaust slowly at the boil. With a carefully selected range of such dyes work in the hosiery dyehouse is made considerably easier and uneven goods eliminated. The dyestuff of slow exhaustion has a chance to reach the innermost part of the goods enclosed in the bags where an easily absorbed dye has no chance to penetrate. Dye aids have little effect once the dyestuff is exhausted, and the goods are dyed unevenly; sometimes boiling will help some in leveling the color, but best results are always obtained by dyeing slowly, using no chemicals to accelerate exhausting until reasonably sure the whole lot is thoroughly penetrated and the dyestuff equally dispersed. Twenty minutes boiling is usually sufficient time, then the proper amount of Glauber Salt may be added to fix the dye and aid the absorption.

When, after following a given procedure, a finished lot is inspected and found to contain uneven dyed goods, a number of causes may be given as reasons for the unsatisfactory work. The worker may have rushed the processing, or not given enough time before entering the salt; the dyestuff may have been added when it was not properly dissolved or diluted, or in too hot a bath; the goods may have been handled carelessly in changing from the boil-off to the dyeing bags, not properly straightened out and separated; the acid added when the bath was at too hot temperature—these are always good causes for uneven dyeing, or it may be one or more dyes entering the combination are not the proper and best ones to use. If the dyes used in that formula are known to be of slow exhaustion and classified to be of about the same degree of penetration, the cause of the trouble should be looked for elsewhere, but if one or more of the dyes should be doubtful in that respect, that dye or dyes should be discarded and some other and better ones used. That dye may not necessarily be a bad one, but for this purpose is not to be recommended. Some dyes work slow and evenly when used in large quantities, and when used in small percentages do not work so well; some others work very well even when no more than a few grams are used in a combination and the only way to find out is to try them on a lot or two and watch carefully.

Dyeing a few stockings in a pot over a water bath heater. One pot is ½ gallon.

Sometime ago a bunch of stockings knitted and

dyed in a mill in the neighborhood were shown to the writer. They were of mercerized cotton and had many prominent streaks all over, and he was asked what in his opinion caused them. The complainant claimed that the streaks were caused by the cotton being unevenly mercerized, but a careful inspection showed without a doubt the real cause of those streaks was a bad mixture of dyes. One of the dyestuffs entering that combination did not dissolve as readily as the others, and caused those streaks. It was a light brown shade, fashionable at that time, and some purple dye had been used to give it a reddish tone, and not having dissolved properly in the mixture had caused those streaks. A darker brown like Direct Brown M should have been used. That dyer had bought a ready mixed dye, or had a limited knowledge of dyestuffs, and had used the wrong color and wanted to put the blame on the mercerizer. A bunch of stockings knitted from the same cotton given the writer and dyed by him with suitable dyes proved that no blame could be passed on to the mercerizer of that yarn.



Testing dyestuffs in a quart pot.

Limiting the Number of Dyestuffs in the Drug Room.

In selecting dyestuffs to make up a formula for a shade, sharp contrasting dyes should be avoided as much as possible. With the large number of dyestuffs now to be had, it is a very easy matter to select dyes that need only a little toning to arrive at a given shade. They used to tell me in my younger days when I was learning to be a dyer that with a yellow, a red or a blue any color or shade could be dyed, and on that principle I learned to do my work with the fewest possible dyes in my drug room. I can remember when for a number of years I have done the dyeing for a mill where they made sewing silk, and machine twist, with just nine dyestuffs. They were: Rhodamine, Azo Yellow, Quinoline Yellow, Patent Blue, Green Crystal, Fast Red, Crystal Violet 4B, Orange, and Archil extract. With them were dyed all the colors in our sample card of 148 shades of pure dye silk, and 25 shades of sumac colors for the tailoring trade, but that was only silk that had to be dyed and with the exception of the sumac colors that had to be changed somewhat with the fashion, the sample card was always the same.

In dyeing hosiery, however, there are two or three, and sometimes more fibers that have to be colored at the same time, and the dyeing is more complicated. The problem of producing level dyeing has to be solved by a judicious selection of dyestuffs and the dyestuff manufacturers have done wonders, coming to the aid of the dyers with so many dyes to select from, so it is plainly up to the dyer to take advantage of it and select the best of the dyes for his needs.

The Catechine Browns and their equivalent, which come under different trade names come in such a variety of tones that any desired current shade can be dyed with them by first selecting the ones that work best in the particular machine and work on hand, and then mixing them with one another in the proper proportions and perhaps toning up. The cotton and rayon can then be dyed very near the shade, and the silk brought up to match the other fibers with neutral or acid dyes. There need be no trouble in bringing the shade up on the silk with this latter class of dyes as they work quite level even when added at the boil in small quantities. The number of acid and neutral dyes to be had is quite large, but here is where the dyer can do some testing and selecting to put in his drug room no more than a dozen of the best for his work, and that number can be reduced to a minimum. Yellow, red, green, purple, blue and orange, tried and selected to be used with or without acid for shading silk, should be, and really are, all that is necessary to keep in the stock room.

Selecting Dyestuffs for Shading.

It happens sometimes for various reasons that the shade is not quite up to pattern and something has to be added to improve the match on the different fibers. The silk may be deficient, in which case a little salt or acetic acid may improve it, and perhaps another boiling or a little of any of the colors mentioned will do even in the same bath. If the silk should be darker than the other fibers, a little phosphate added to the bath will effectively reduce the color on the silk and make it go on the cotton, but if it is the cotton that has to be corrected the same procedure will not work satisfactorily. Any addition to improve the cotton should be made in a fresh bath, and for this reason some direct colors known to leave the silk white should always be on hand. There are a number of such dyes and should be tested and selected for just

Mr. White's next article will continue the discussion of this subject, and following this he will take up the subject of dyeing rayon in hosiery and other materials. The readers who have been reading Mr. White's previous articles will, we feel sure, look forward to having his views upon this topic.—The Editor.

that purpose, and when the time comes to make use of them they will be greatly appreciated. Any dyestuff salesman will be glad to point out the best ones he has for that purpose. Here, too, no more than half a dozen such dyes should be sufficient to fill the bill. A larger number would only be unnecessarily confusing.

Behaviour of Dyestuff Under the Heat in Bath.

It will be found that some dyestuffs behave in a different way when testing in the laboratory than when in actual dyeing in the vat, or in the machine with a lot of goods.

If the beaker in the laboratory is heated over a gas or electric stove, the bath can be heated to actual boil and the bath evaporates easily. If the operation is carried on for any length of time, it is hard to control especially with the direct colors that do not exhaust readily. If the beaker is taken off the stove, the bath cools off too quickly; if kept on to the boil there is danger that the sample may be roasted. For that reason that kind of heating is not recommended by the writer, who prefers a hot water bath where a pot can be kept in it for a considerable length of time without any appreciable evaporation, and several pots can be kept going at the same time. In fact, in a water bath—unless some substances like glycerine, saltpeter or common salt are added to the water in the heater—the bath in the pots never gets any hotter than around 195 degrees F., which is sufficient to dye any kind of sample of hosiery except wool.

In actual dyeing in the machine, however, the bath can be brought to a violent boiling and it is easy to see that under such conditions, if it is desired to bring down the shade a little from the cotton, a small addition of acid to the bath, and raising it to the boiling point, will bring the desired effect, which could not be obtained in the beaker heated over a water bath. It will also be found that a thorough boiling of the bath will make the color penetrate the fiber, thereby reducing somewhat the depth in shade. These things when clearly understood by the dyer will be greatly appreciated.

Some dyes have a tendency to change when subjected to several boilings, and when viewed while still warm, and it is very important that the dyer should learn to make note of these changes and to adapt himself accordingly to avoid correcting shades that really need no correcting.

[This is the nineteenth article of this series by Mr. White. The next installment will appear in an early issue. —The Editor.]

Knitting Show and Convention in Philadelphia April 15-19

Silver Jubilee Exhibition to Attract Unprecedented Attendance and Up-to-Date Displays

SURPASSING in its enormous proportions, all previous efforts to present a comprehensive display representative of the most modern developments in the hosiery and underwear manufacturing trades, the Silver Jubilee anniversary of the Knitting Arts Exhibition to be held in the Commercial Museum, Philadelphia, April 15 to 19, inclusive, will furnish an attraction of international interest.

The exhibition held annually in connection with the convention session of the National Association of Hosiery and Underwear Manufacturers, will be the largest in the history of the trade, occupying the entire exhibition floor of the Museum.

Featuring the display of machinery, there will be two of the latest types of full-fashioned hosiery machines, one of which is an imported product. These will be in operation throughout the five days of the exhibition. The Silver Jubilee exhibition will also present many other types of machinery of the very latest design, all of which will be operated by experienced operatives.

Additional Exhibit Spaces Required.

When all the allotted spaces in the exhibition hall were sold out a few weeks ago, it was deemed necessary to take over the entire building, thus providing an additional 40 spaces which will undoubtedly be sold out before the opening day, Monday, April 15th.

The demand for trade tickets exceeds that of any previous Knitting Arts event, giving evidence that the attendance may exceed any previous year, according to Chester I. Campbell, under whose personal direction the display will be presented.

Thursday, April 18, will be an important day in the history of the trade, for it will be the occasion of the annual banquet and business session of the National Association of Hosiery and Underwear Manufacturers. These two events will bring together many leaders in the trade from all sections of the country.

While the election of officers will be an important feature of the business session, many outstanding trade problems will also be called up for discussion and action taken for the benefit of all branches of the industry.

Looking backward a quarter of a century, the deans of the hosiery, underwear and sweater industries, will find many startling contrasts and radical improvements in the machinery exhibits at the present Silver Jubilee display.

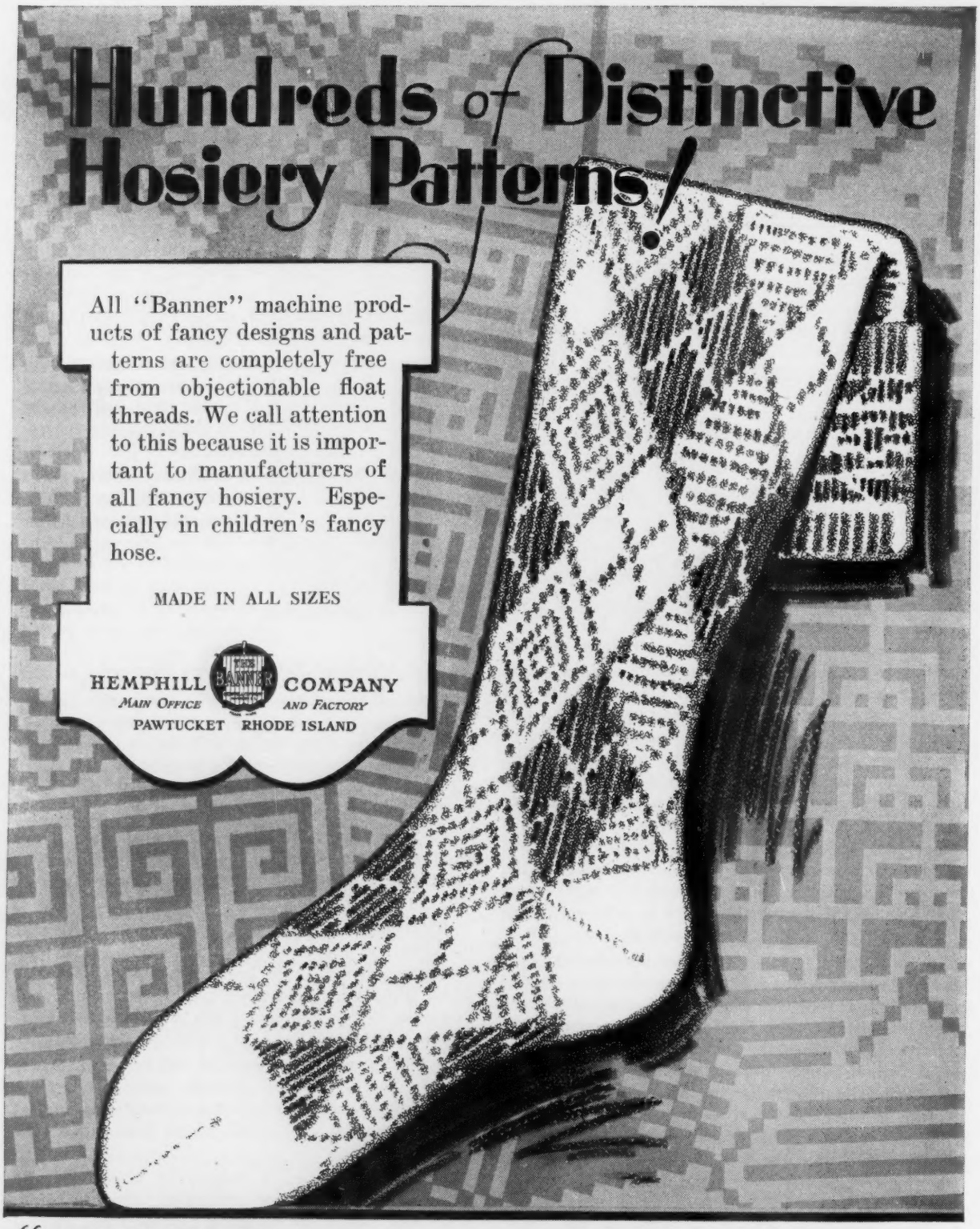
An especial improvement for the purpose of expediting the dispatch of late news developments and special messages to the exhibitors in the Museum hall will be inaugurated this year with the installation of a central broadcasting system which will be heard in all parts of the hall.

Hundreds of Distinctive Hosiery Patterns!

All "Banner" machine products of fancy designs and patterns are completely free from objectionable float threads. We call attention to this because it is important to manufacturers of all fancy hosiery. Especially in children's fancy hose.

MADE IN ALL SIZES

HEMPHILL COMPANY
Main Office and Factory
PAWTUCKET RHODE ISLAND



"BANNER" Jacquard Machine Patterns

New York Sales and Show Rooms
93 Worth Street, New York

Philadelphia Sales and Show Rooms
Heymann Bldg., 213 S. Broad St.

Southern Offices
James Bldg., Chattanooga, Tenn.
Commercial Bank Bldg., High Piont, N. C

A Stock Control Plan *for a* HOSIERY *Mill*

By Norman Cole

How a Southern Mill Profits by Its Use

THERE are textile mills that regard retailers' stock control systems as being one of these things which may be good for one man and poison for another—a hearty banquet for the retailer and prussic acid for the mill.

Yet one of the largest hosiery mills in this country had urged upon its dealers what is in effect a stock control system long before stock control became of its present importance to retailers.

Another hosiery mill, located in the South, has for more than two years advocated the use of a stock control system by hosiery departments and has devised a simple system for the use of its dealers who do not have a stock control system of their own.

The system consists of order blanks so made out that the hosiery buyer need place only check marks on it to show the styles, colors and sizes needed to bring his or her stock up to normal. A box is attached below and back of the hosiery counter into which is slipped the torn off front of each hosiery box, after the last pair of hose is sold from it.

The front of the box thus represents three pairs of hose of a particular style, size and color that has been sold, as soon as it has been inserted through the slot in the stock control box. The buyer may order once or twice a week, or at whatever intervals thought necessary, simply by opening up the stock control box and making a check mark for each box of hosiery that has been sold, in the proper place on the order sheet. Only a few minutes are required even where the order amounts to a large number of dozens, and the buyer is assured of ordering only the styles, colors and sizes that are meeting with ready sale.

These are by no means the only mills that so have taken advantage of retailer's stock control policies as to benefit as materially as the retailers themselves have.

The merchandise managers of large retail establishments, selling textile products, adopted stock or unit control policies to minimize the danger of frozen stocks and to make every dollar of working capital turn over with the greatest possible rapidity. After taking huge losses during the great deflation period, it seemed more in line with common sense for a store's buyers to purchase so far as possible only what the store knew it could sell right away, rather than to gamble on expected price raises or consumer demand by purchasing in large quantities.

THIS article will appeal directly to any mill which sells its product to retailers—but it will also interest mills which distribute through jobbers and wholesalers, in view of the new "hand-to-mouth" methods of purchasing.

It tells how a prominent southern hosiery mill has simplified the matter of re-ordering hosiery stock by the retailer customers. The easier it is for them to order your goods, particularly if they are good sellers, the more natural it will be for them to send repeat business; and the more difficult it will be for a competitor to break in on that customer's business.

Read how this mill makes it convenient for its customers to buy sellable goods from them, and see if the idea can be applied in your own case. It's a simple idea to operate, and any mill selling direct to retailers should be able to apply it with profit.

What is "Style Consciousness?

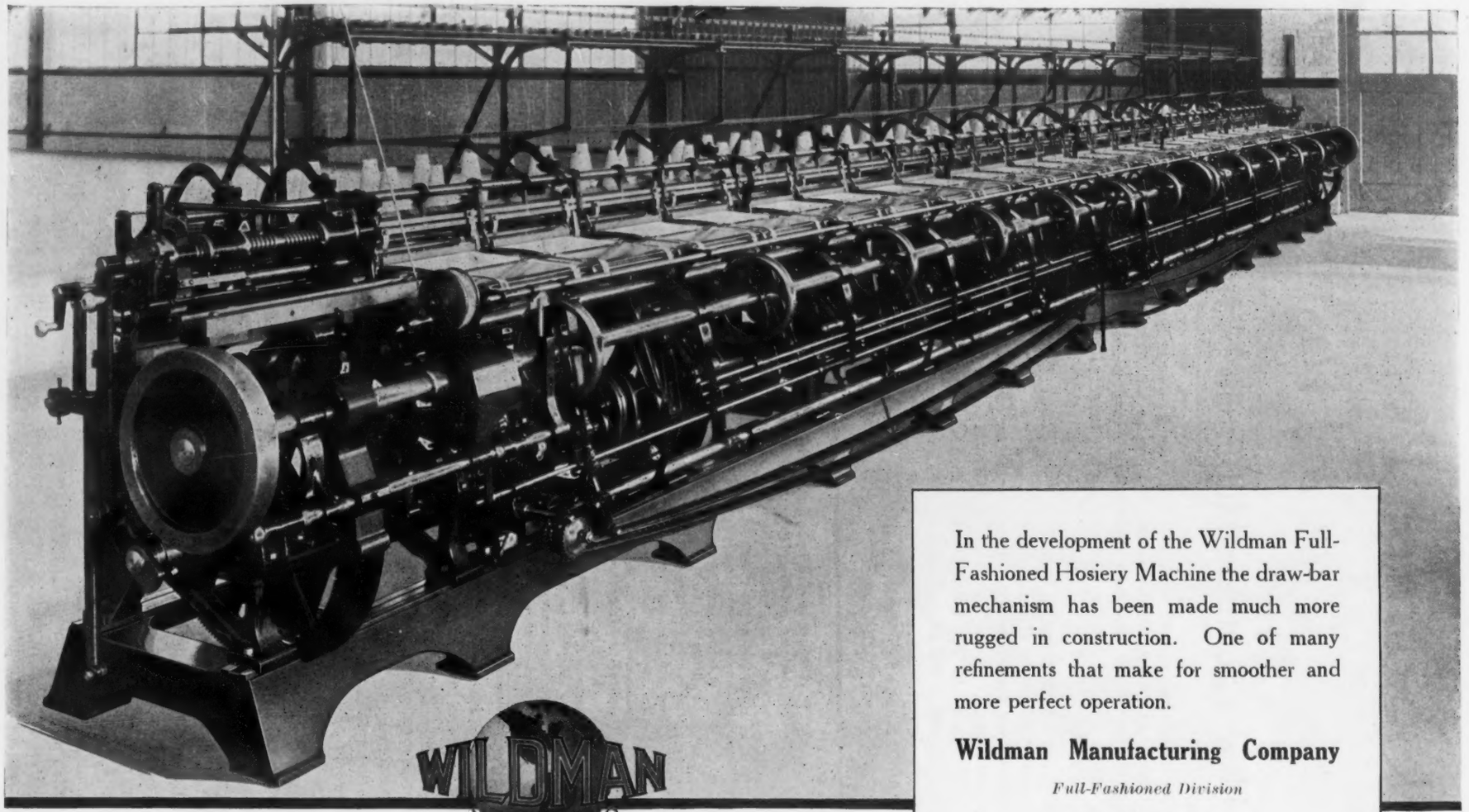
Also, consumer demand in the last few years has become a most fickle lady, if anything so seemingly deceitful may be called a "lady". The buying public has become what merchandise men call "style conscious", which has added to the risk of purchasing except upon a hand to mouth basis.

"Style consciousness" to a woman means a wide brimmed red hat yesterday, a black hat without any brim tomorrow . . . and possibly no hat at all tomorrow. "Style consciousness" to a retailer means a hurry-up call for a pulmotor to be applied to his bank roll every time he doesn't play up to the consumer's buying trend.

In the dear old days gone beyond recall, the retailer's millinery buyer might nonchalantly place an order for say two dozen wide-brimmed red hats and one gross assorted black hats without brims. Today if she checks up her stock control records, she sees she has a dozen reds on hand that are moving slowly but is getting an increasing demand for the blacks; consequently, she forgets red hats except to cut the price and push out her remaining stock of them as fast as she can. On black hats she places an order to take care of only immediate requirements, for she knows she can reorder by wire and get express shipment if an unexpectedly large consumer demand develops.

This is a sample of stock control that successfully is being applied by retailers to blankets, sheets, towels, hosiery, dresses, gas range, etc., and will be applied to live elephants if it becomes the style to own one.

Mills selling exclusively through wholesalers have not come into as direct contact with stock control systems and methods as have both mills selling direct to retailers and mills with selling agents that sell direct to the larger stores. This is because the wholesaler



In the development of the Wildman Full-Fashioned Hosiery Machine the draw-bar mechanism has been made much more rugged in construction. One of many refinements that make for smoother and more perfect operation.

Wildman Manufacturing Company

Full-Fashioned Division

Norristown, Pa.

WILDMAN
THE WORLD'S STANDARD

WILDMAN
FULL-FASHIONED HOSIERY MACHINE

acts as a shock absorber in directly receiving the bumps of large members of comparatively small orders placed with great frequency by the retailers. If the wholesaler is himself ordering from hand to mouth by using a stock control system of his own, of course the mill is in almost the position of the mill that is selling direct, with the difference that the jobber's orders on the average may run greater than a retailer's as the jobber usually can combine several retailers' orders before they are passed on to the mill. There are exceptions to this, but as Kipling would say, "That's another and different story."

Where a mill gets the full brunt of many orders in place of a fewer number of larger ones, it necessarily has a greater distribution cost. If not an axiom it at least has not yet been demonstrated as merely folk lore that there is a direct relation between distribution and production costs.

As production increases and the production costs of a commodity decrease, there is a necessity of increasing the actual market for the commodity . . . and in these highly competitive days there is no cut price on the cost of building markets, which is a distribution cost.

To raise distribution cost further, stock control has now entered the picture. Instead of shipping 100 dozens of style X-42 to Doe, Roe & Co. of Kansas City, Mo., which will keep them quiet for the next six months or a year, or forever, depending upon the saleability of style X-42, Doe, Roe & Co. place an order every week for two dozen or whatever quantity will take care of their immediate requirements as shown by their stock control records.

But does the added packing, shipping and clerical overhead costs stamp stock control as a ruthless villain who is bent upon raising the mill's distribution cost to a point that eats up the lowered costs of mass production?

A Mill Production Control

MANY mills that are feeling the full force of stock control policies, emphatically deny that stock control is a villain. They even are inclined to regard stock control as the hero of the play who grabs Little Nellie Profit off the railroad tracks just as the Frozen Stock Express comes dashing down the line to cut her into so many pieces even her creditors couldn't recognize her.

These are mills that have taken a leaf from the retailer's book. In fact, they have taken not only a leaf but the book's entire chapter on stock control.

They have installed mill stock control systems of their own, based upon the orders which they receive each day from retailers.

For instance, a prominent southern hosiery mill that has shown remarkable annual increases in its sales volume during the past several years, manufactures a large number of styles for women and men. Each of these styles is produced in from approximately 12 to 26 different colors and six sizes.

Each day all orders received are tabulated on sales or stock control sheets to show how each style and color is selling both in comparison with other styles and colors and in comparison with the previous sales of the same style. From these stock control sheets it is a simple matter to chart the sales of each style from day to day, and month to month. As a result, the mill at all times has a complete, accurate chart picture of the sales of each item it manufactures and knows to what extent each item is gaining or losing in its sale to the retail trade.

> IN conjunction with cooperating with its retailer-customers in operating a stock control system, as described in this article, at least one southern mill has developed a mill production or stock control method which is also described by Mr. Cole in this discussion. Any mill—whether selling to wholesalers or stores—could easily work out a similar system, to show graphically, and at a glance, which styles are selling and which are not doing so well.

Before the days of stock control by retailers, when large orders to take care of sales over a fairly lengthy period of time were the rule instead of the exception, it practically was an impossibility for a mill executive to exactly plan his production unless he was the seventh son of a seventh son born with the gifts of mind reading and of prophecy.

There was not quick enough reaction from the consumer to retailer to mill, for the mill to make anything but "guess" estimates regarding the future demand for any particular style. A mill operating under the very shrewdest and careful management often would find itself with a large stock of finished merchandise on hand that had to be thrown upon the market at a loss because it did not meet the changing style demands of Mr. and Mrs. Consumer.

But where a mill can make use of the retailer's stock control systems, they can be so used as a check or guide on its production as to practically eliminate the danger of frozen or distress stocks.

To illustrate how this works out in actual practice. For about two years a mill had a woman's style number that was considered one of its leaders. Sales on this number kept at about the same ratio to its total sales month after month. It was such a steady and large volume seller, it had been the practice to put it on the machines whenever other styles were not being run, for style No. 1000, as we call it, was one of those "staple" styles on which it was safe to carry large stocks. It indeed became one of those good friends who can do no wrong and was so considered by the production department until the mill's daily record sheets and control charts began to tell a sad story.

Evidently, Miss and Mrs. Consumer had a style preference for some other style than old reliable No.

(*Continued on page* 691.)

Multi-Design is Here— and Here to Stay!

As knit on Fidelity's Multi-Design True Rib Machine, fancy tops for Men's Half Hose are produced in designs and colors harmonizing with the leg . . . A new and lasting improvement in half hose . . . Capable of almost infinite variety . . . In keeping with the modern idea that it takes color and style to stimulate sales.

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Among the Knitting Mills

PLANS are being made for the establishment of a full-fashioned mill at Charlotte, N. C., by the Fleetwood Silk Hosiery Corp. Lockwood, Greene, Inc., Charlotte, are the engineers. The main building will be two stories 110 x 100 feet, of steel and concrete construction. Equipment will include 28 full-fashioned machines.

T. Walter Fred, who recently resigned as president of the Davenport Hosiery Mills, Chattanooga, Tenn., will erect a full-fashioned mill at Nashville, Tenn. The building will be 300 x 126 feet, two-stories. Robert & Company, Atlanta, Ga., are the engineers.

Ritca Hosiery Mills, Inc., have been organized to acquire the plant and property of the Hall Hosiery Company, Statesville, N. C., whose plant was destroyed by fire a year ago. D. C. Ritchie, T. G. Casey, and Fred Guerrant, of Statesville, are interested. Plans are to rebuild the mill and install equipment. Men's hosiery will be manufactured; and 30 machines will be installed.

Globe Knitting Co., Burlington, N. C., have been organized by J. J. May, Mrs. Cora May Moize, with a capital of $100,000.

Peerless Hosiery Mills, Burlington, N. C., have been incorporated with a capital of $100,000, by M. W. McPherson, R. L. Coleman and H. W. Coble. It is understood spiral half hose will be manufactured on 25 machines which will represent the initial equipment.

Perfection Hosiery Mills, Burlington, N. C., will add a full-fashioned department, with the installation of 12 Reading machines. John Shoffner, C. E. Fogleman, John Black, Lon Shoffner and Clifton Elder, operate the Perfection plant. The product will be sold by the selling organization of the Standard Hosiery Mills, of Burlington.

Ernest Pennington, of Burlington, N. C., for some time connected with the Pen-Co Hosiery Mills of that place, has announced the establishment of a new mill, to be equipped with 22 machines for manufacturing spiral half-hose.

Sir Walter Hosiery Mills, Burlington, N. C., has been organized to manufacture 240-needle, spiral half-hose on Scott & Williams machines.

Sterling Hosiery Mills, Inc., Spindale, N. C., recently organized by the owners of Horn Co., of Spindale, and Forest City Hosiery Co., of Forest City, have purchased six Reading full-fashioned machines, which will be installed in the Horn plant at Spindale. The officers are K. S. Tanner, president; S. E. Elmore, secretary; and T. Max Watson, treasurer.

R. S. Wollstein, of Rome, Ga., R. Edge, of Louisville, Ky., and others have organized the Winner Hosiery Mills, Boiling Springs, N. C. The capital is $100,000.

Nu Fashion Hosiery Mills, Murphy, N. C., have been organized by G. T. Whitlock, of Hendersonville, N. C., and others. Mr. Whitlock will install 120 automatic seamless machines, producing women's rayon hosiery.

General contract for the erection of the addition to the Mock-Judson-Voehringer Co., full-fashioned manufacturers, Greensboro, N. C., has been awarded. The addition will increase the floor space 75,000 square feet, and the capacity of the plant will be more than doubled.

W. P. Stevens, 620 Bibb Building, Macon, Ga., is interested in the establishment of a half-hose mill at that place, and desires full information with reference to equipment, etc., etc.

It is understood that Cartersville Mills, Inc., Cartersville, Ga., operated by Fleitmann & Co., of New York, will add men's underwear to the present line of children's materials.

William Carter Co., Barnesville, Ga., plan to double the capacity of their plant, it is reported.

H. K. Regar & Sons, Inc., have acquired the seamless plants of the Cadet Knitting Co., at Anniston, Ala., and are removing the equipment of the Regar plant at Cedartown, Ga., to Anniston.

Alabama Hosiery Mills, Inc., Decatur, Ala., will manufacture full-fashioned hosiery in a mill to be erected. A. G. Patterson is president, and J. E. Garrett, formerly manager of the full-fashioned plant at Cooper, Wells & Co., at Decatur, will be vice-president and general manager.

Bethayres Knitting Mills, Inc., Bethayres, Pa., have been acquired by the Miller Hosiery Co., Inc., 330 Fifth Ave., New York City. The Miller company has handled the entire output of the Bethayres mill for several years. At present a new building 52 x 170 feet, two-story, is being added to provide for 20 new full-fashioned machines.

A Stock Control Plan.

(*Continued from page* 689.)

1000. Every day, every week the chart line that designated No. 1000, instead of keeping its place up near the top of the sheet, was staggering down nearer and nearer the bottom.

When one sees an old trusted friend suddenly take up bad habits, one usually makes excuses for it and regards it as only a temporary case of insanity. But daily records in black and white make no excuses or apologies. They show only one thing—facts. Doubtless, the mill, before it had taken advantage of stock control, would have gone on producing No. 1000 until it woke up some rainy cold morning with thousands of dozens of stock that had to be "slaughtered" in more ways than in just the newspaper advertisements of the retailers who eventually bought it.

As it was, the mill knew as quickly as its retailers —and more quickly than its retailers in certain localities where the style trend against No. 1000 had not yet reached—that No. 1000 was quietly expiring. The mill had time to change over to a new style number to take the place of No. 1000 and to clean out without a loss its stock of the old style.

Let it be conceded that retailers' stock control policies do raise a mill's distribution cost. But mills that have taken full advantage of stock control claim such cost is considerably more than overbalanced by preventing costly losses that otherwise would be incurred as a result of frozen stocks and from not being able to quickly follow latest style trends.

No matter how much lower a mill's production cost is than the costs of its competitors, it can not remain in production unless it is producing commodities that follow style trends. The minute it ceases to follow style trends, its distribution cost knows not even the sky as a limit . . . a very giant of a cost in comparison with the added cost required by the stock control buying policy of retailers.

In the final analysis, unless a mill is producing what the consumer wants, as reflected through the retailer or the retailer and jobber, and is furnishing its goods to the retailer or jobber when and how these two gentlemen want it, the mill's production volume will suffer.

The added cost of distribution resulting from stock control would appear a small price to pay in comparison with that of lower production with its attendant higher production costs.

By no means is it contended that stock control is a cure-all for every mill problem. But stock control is here, probably permanently.

Already it has been demonstrated by mills that it can be as profitably used by the mill as it can by the retailer.

Better Prices—

for your product naturally result from better fabric. Type H. S. L. machines invariably produce better fabric--and faster!

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Asks About Cross-Dyeing Hosiery.

EDITOR COTTON:

More and more modern hosiery is being produced by cross-dyeing. Cross-dyeing as we used to understand it was the dyeing of wool in the presence of cotton. All dyers when called upon to dye cotton fast to cross dyeing, knew, in those days what to use.

In modern hosiery dyeing cross-dyeing means something else again, instead of dyeing wool in the presence of cotton, we find that cotton is being dyed in the presence of cotton already dyed, also that rayon is being dyed in the presence of both dyed and undyed cotton.

The dyer in the cotton yarn dyehouse who has to produce dyed yarn fast enough for these requirements is certainly up against it; price is against the use of the very fastest colors.

It would be a great help if some hosiery dyer would tell the readers of COTTON all about the cross-dyeing as practiced today in southern hosiery mills. Maybe then the harassed dyer of cotton yarn would understand better what the requirements of fastness were.

CONTRIBUTOR No. 4562.

Building a Fine-Gauge Seamless Hosiery Mill.

The Finishing Department.

EDITOR COTTON:

Last week Jones and I had the pleasure of paying our good friend, Tom Smith, down at Pineville, another visit, to discuss with him some questions pertaining to Jones' new mill. Jones had gotten Tom's views on the various operations up to, and including, dyeing,* and this time began by asking him how much floor space he would need in his boarding and finishing rooms, and what equipment he would need. In reply, Tom said:

"Let me see, I believe you are figuring on 300 machines. Well, 300 machines will give you a production of 750 dozen per day. I think it is always advisable to figure on the boarding and finishing room to take care of a night shift, which in your case would give you a total of 1,500 dozen.

"To get the best results on boarding, especially chiffon-weight goods, it is advisable to board on low temperatures, so I would recommend using hot water equipment and giving each boarder 24 forms. You should average 80 dozen from each 24 forms, and to board 750 dozen and make allowance for idle boards due to odd size assortments, it will be necessary to figure on one extra set of forms, so it appears to me that you will need 11 sets of forms, 10 double tables of 24 boards, and two half tables of 12 boards assorted something like this: Size 8½, two sets; 9, three sets; 9½, four sets, and size 10, two sets."

"What about having one or two sets of boards for adjustable toes?" asked Jones.

"You can do this, but I believe that the time and trouble you will have changing toes will fully justify the extra investment in a few extra boards," said Tom, continuing,

"Now with reference to floor space, these tables should be placed to allow for 2-foot alleys. Then the floor space necessary for 10 whole and two half tables and hot water pump will be 15 x 52 feet. To make room for double this number of boards to take care of a double shift production, you will provide double this space, and add more tables when necessary.

"I would arrange these tables in two sections, on oposite sides of the room, with a working alley 12 feet wide, between the ends of the tables, running through the center of the room. This alley will take care of the stock boards for each boarder and give trucking space. Figured on this basis of two sections of 10 double and two half tables, with a 12-foot alley between, you will need a room 42 x 52 feet, or 2,184 square feet. I think this lay-out will work out a convenient and economical arrangement. If you have certain sizes going behind, you can adjust this, to a

* These interviews were reported as follows: Knitting Department, February, 1928 issue; Seaming, Looping and Inspecting Departments, July 1928 issue; and Dyeing Department, December 1928 issue. Copies of these previous installments will be furnished to any reader who requests them.—The Editor.

We invite our readers to make use of this department for the discussion of any and all problems arising in connection with the knitting mill from the office to the packing and shipping departments. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. All questions will be answered as promptly as possible. The names and addresses of the contributors must be given, but will be held in confidence and a pen name substituted when printed. All accepted contributions other than questions will be paid for after publication. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

great extent, by putting the faster boarders on these sizes, and vice versa."

"I notice, Tom, that you have not provided any space for storing stock to be boarded," commented Jones.

"No, you can add as much for this as you like, but my experience has been, the sooner you get the stock on the boards after leaving the extractor, the better the finish will be," explained Tom.

"This brings up another subject that I might discuss a minute. We are all too careless about extracting. We don't attach enough importance to this operation. As a matter of fact, each style and each weight batch requires its individual formula for extracting. The extractor should be equipped with an automatic time-stop and a time table worked out and hung near the extractor, showing how much time each style of a given weight should run, and the time-stop set accordingly. There would be no advantage in this, however, if the batch is allowed to sit around and dry out after being extracted. This is important if you are to get first-class boarding, and, speaking of boarding, the average stocking boarder is kind of sorry—I know, for I've been one myself—but he gets 'cussed' about a lot of things for which he is not responsible. We knit our stockings all sizes and lengths, with the inside of the hem of one texture and fabric and the outside another, then scroop them up in the dyehouse and half-extract them and then expect the boarders to fit them on the board and make the hems all straight at the bottom. Which reminds me of the freshman in the physics class when presented with the problem—'If an irresistible force should come in contact with an immovable body, what would be the consequence?' His reply was, 'A hell of a collision'. This is what is happening daily in the average boarding room—'A hell of a collision'.

"When you see a boarder going around with his fingers worn out and blistered, his work is not right, or he has not been properly trained. In either case, it is a reflection on the management. A visitor came into my mill sometime ago with his finishing room foreman, and while looking over the boarded work remarked to his foreman, 'Charlie, that is mighty good boarding.' I replied, 'You are wrong; that is mighty good knitting' ".

"I will think about this when I start my boarding room," said Jones. "Now tell me something about finishing. How much floor space will I need and what other equipment?"

Equipment for Finishing Department.

"As to floor space, the same plan would apply to finishing as boarding," Tom answered. "I would provide floor space for 1,500 dozen. The finishing room proper should be for stock in process only, which would require about 4,000 square feet. The mated or boxed stock should be carried in a stock room adjoining the finishing room. The stock room, packing cabinets, labeling and shipping departments would require about the same amount of space as the finishing department.

"As for equipment, I prefer individual tables. A convenient size is 7 x 3 feet, 3 feet high. This height will permit the girl to stand or sit as she chooses (you will pardon the word choose). The average girl will do 20 per cent more work standing than she will sitting, and she will choose to stand the greater part of the time. Each girl should be given a comfortable, adjustable stool or chair, with an adjustable form-fitting back to use when she feels disposed to sit.

"The table suggested is suitable for any of the three operations: mating, stamping and folding. The top can be made of any material giving a hard, smooth surface, but my experience has been that a well finished hardwood top will give the most satisfactory service. You will need about 25 such tables for your finishing room.

"In addition to this you will need three or four 12 x 3 foot tables, 2 feet high, to set orders out on. For handling boarded work through the finishing process and for shelving for mated stock, racks or cabinets, you will need about 1,000 stock boards or trays. Some mills use steel shelving in the stock racks, while others use fiber boards. I prefer trays made of hardwood boards, made of stock about ⅜-inch thick, glued together and fastened with a splice at the two ends. These boards should be highly polished on both sides and treated and finished in the same manner as a hardwood floor. The size of these boards should be approximately three feet square. Stock racks or cabinets may be built to accommodate as many of these trays as the number of styles and colors demand. By using a tray of this type the trays carrying work in process are interchangeable with the trays in the stock racks and cabinets.

Additional Necessary Equipment.

"You will need a half dozen trucks with rubber-tired wheels, with body-frame designed to handle boxed stock from the folders to the shipping department; also, three or four fiber or steel trucks 24 x 36 inches, 25 inches high, for boarding work on trays. You will need about 60 small tables 2 x 2 feet, 2 feet high, to set trays on. One man can easily slide a tray of work from the 25-inch truck to any of the stock tables built 2 feet high. You should have 25 foot-stools to go with the work tables. You will require three filing cabinets of at least 100 drawers each to take care of the various kinds of packing—"

"Say, Tom! I'm going into the hosiery business, and not the furniture business," interrupted Jones.

"I know you are, Jones, but I'm only giving you just a few of the principal items you will need in order to get you started. You will find there are many other things you will have to have, many of which I will mention briefly, such as needles, pins, duster-brushes, whisk-brooms, monel pans for stamping tables, electric irons, label printing machine, stencil cutting machine, paper, envelopes, glue, paste, paper seals, cockroach exterminator and rat poison."

"What is your system for handling work in the finishing room, Tom?"

"In the first place, you should employ the right kind of help. You can't always tell what a girl is capable of doing until you have given her a trial, but there are certain common-sense rules which may be applied to advantage in employing help for a finishing

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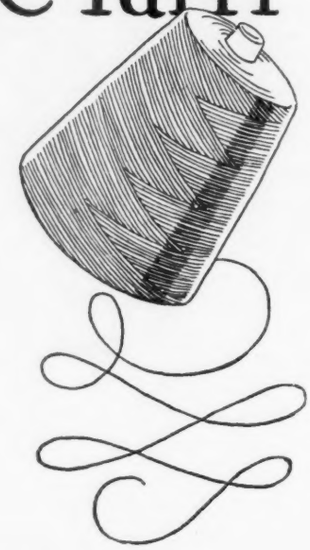

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924 James Bldg., Chattanooga, Tenn.

room. In the first place, there is quite a bit of reaching to be done, and a tall girl, with long arms, has the advantage. Then, too, the slender girl does not tire on her feet as quickly. Another thing to look for is neatness. If a girl is slouchy in her dress; for instance, has the back seam of her stocking on the side of her leg, the indications are that she will be careless in her work. Age, too, is to be considered. I prefer girls past twenty years old, who are more serious-minded. Last, but not least, a certain culture and refinement, having an appreciation of silk hose, hardwood tables and modern equipment, is to be looked for.

"The first operation in the finishing room is mating. I like the method of stacking goods of the same length on the same stack. First, you start four lengths of work on the table, the minimum and maximum lengths with two modern lengths. Then each stocking you lay down on its respective stack mates with all the others in the same stack. When you count off dozens, all the stockings in the dozen are the same length except the final dozen at the conclusion of the lot. These even lengths help the folder to fold all the three pairs alike, and the goods have a neater appearance in the box. There are some objections to this system. The high-spliced heels and the hems must be knit approximately the same length, but this is what should be done anyway. We used to have to mate the stockings according to colors, but we have quit that now since we have learned to dye them all the same color."

"With this method, how do you pair lefts and rights?"

"That is simple, Jones. You mate lefts this week and rights next week, and change on Sunday—"

"I get you; just like we did before we put a seam up the back."

"The mated stock is put into the stock bins," continued Tom. "Here the stock man takes his copy of the order and gets up the assortment of sizes and colors as specified. At the same time, the label man labels the specified boxes by a copy of the same orders and has the boxes ready for the folder when the stamper girl has finished with stamping, putting on seals, riders, etc. The stamped goods and the labeled boxes meet at the folder and each is a check on the other.

"After all, the human element is the biggest factor in the finishing department. Provide the best arrangement, arrange it in a systematic and orderly manner; keep all culled stock in order and out of sight as much as possible and try to create an atmosphere of precision, for its psychological effect. With the right kind of girls, they will add to this their own personality, and will produce an article that will bring in orders reading: 'Same as last', which is a happy situation."

Tom looked at his watch and said:

"There's an old den back over here in the woods where I left a couple of squirrels last Fall, and I'm planning to go back after them this afternoon, and I would like to have you gentlemen join me."

At this gentle hint, we thanked Tom for the invitation and the courteous interviews he had given us and wished him success at the den. T. O. (N. C.)

Plaiting on the Model K.

EDITOR COTTON:

I would like to offer to the readers of "KNITTING KINKS" some pointers with reference to plaiting hosiery. This is suggested by the inquiry of "CONTRIBUTOR NO. 4109," who states that in making pointed heel seamless hosiery, on a 260-needle, 3½-inch, Model K machine, with the six-finger attachment, he has plaiting trouble on going inside of the pointed heel. He uses eight thread pure Japan silk for the body and 120s mercerized for the plaiting yarn. He says he can get good plaiting by using enormous tension on the body yarn, but this of course wears out the needles and sinkers quickly, etc., and grooves the fingers and throat plates, and causes cut-outs on the yarn changes, etc. His plaiting thread, he says, has no tension at all, and his yarns are properly spaced, and the machine is correctly adjusted mechanically.

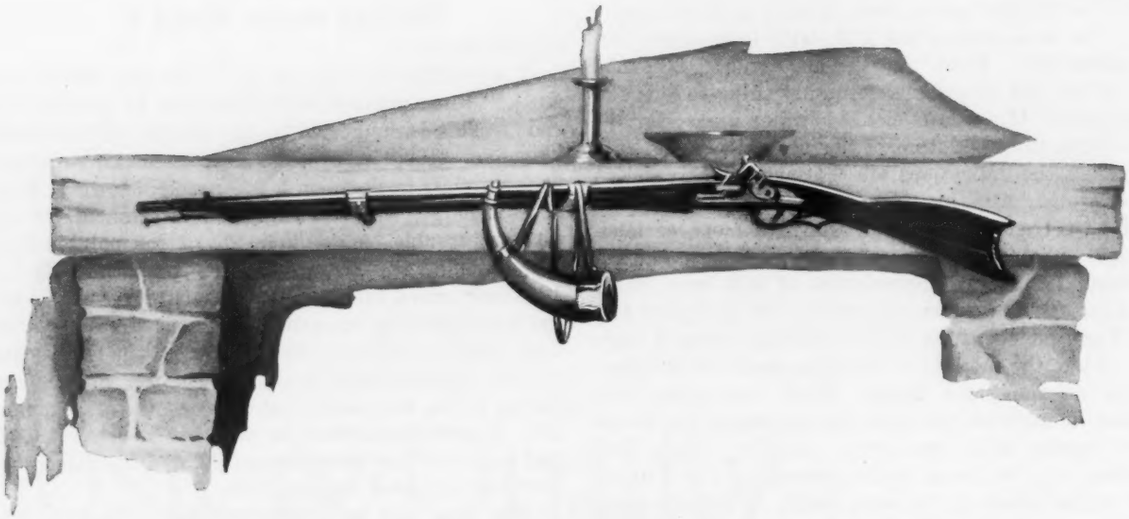
We have had no experience making pointed heel hosiery, but have had much experience with plaiting, and I thought perhaps some general observations might be of help. In the first place, it has always seemed to me to be more of a matter of faith than anything else, and if a knitter is getting good plaiting, no matter what machine adjustments he may be using, it is best to let him alone. There are, however, a few well known and established facts which must be taken into consideration if successful plaiting is to be secured.

First, the needles and sinkers of the machine should always be kept in first class condition, and the cylinder should be kept reasonably clean. Second, the throat plate and the yarn tubes must be in first class condition, free from grooves or rough surfaces. Third, tensions must be properly adjusted, and a special plaiting tension is advisable; there are several makes on the market. Excessive tension on the plaiting thread should be avoided, and when the machine is properly adjusted and in good condition, excessive tension should not be necessary.

If a man has not had much experience with knitting gum silk, it is well enough for him to know that gum silk, under the very best of conditions, is very hard on the needles and sinkers—the sinkers in particular—and that operating under the best conditions he will probably find it necessary to replace sinkers at least once a year, as perfect plaiting cannot be done with sinkers that are worn or nicked, and they will stand up only so long and no more. For this reason, excessive tension is to be avoided, as the greater the tension, the greater the wear on needles and sinkers.

As a general suggestion I would advise checking up on the needle cylinder. See that the cylinder walls are in good condition and that all needles move uniformly free, and that the needle latches and rivets are in good condition. Also see that sinkers are not badly worn. Then check up on the throat plate and the yarn fingers to see that they are free from grooves and rough surfaces.

In this connection, I have found India oil stones very useful in keeping machines in good condition, and if your inquirer has not tried them, I would suggest that he get a lot of stones assorted as follows:



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when game could be brought down from your front porch

But the "easy shots," in sport and business, have long since fled. The cumbersome fowling-piece has been replaced by long-range, high-velocity rifles . . . Machines that once were the finest thing of their kind are giving way to equipment that produces better merchandise — faster and cheaper than ever before.

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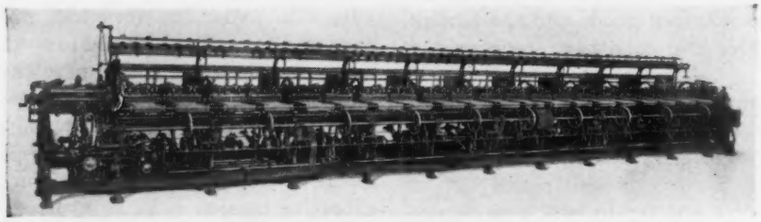

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Full-Fashioned Knitting Machine

India stones, triangular No. 8 and No. 9
India stones, round tapered No. 27.

The triangular stones are very useful in keeping the working surface of the throat plate in good condition, and the round tapered stone is helpful in keeping the yarn eyes and the yarn fingers in good condition. These little stones are all hand tools and practically inexpensive, and will work wonders in the hands of a skilled mechanic who will use them correctly and study the benefits to be obtained from them.

Answering the inquiry as to whether it is practical to make the type of stocking in question, whether it is practical or not, much of it *is* being done, and he will very likely find that by continued and persistent effort he will be able to overcome his trouble.

CONTRIBUTOR NO. 4124.

Operating and Adjusting the Banner Knitting Machine.

PART THREE

EDITOR COTTON:

In this, the third article of my series on this subject, I shall continue my discussion of adjustments on the Banner machine. The subject of Yarn Levers will complete the discussion of adjustments, and following this will be some suggestions on the care of needles, in the article to appear in next month. Then I shall begin a discussion of common, every-day difficulties which arise in the operation of these machines.

Yarn Levers.

The fingers naturally cause most of the trouble at the yarn changes. They should seat in the mouthpiece with just enough clearance for the yarn to pass through smoothly without binding, and it is often necessary to grind some of the seating point on the fingers to lower them the required depth, especially when there is any occasion to knit with the needles at a low point. This may be partially overcome on some gauges by grinding a little off of the point of the center cam, but care must be taken when doing this.

After the yarn changes have been made to operate satisfactorily, there is very little trouble given by the fingers, the defects usually coming from another source. Porcelain eyelets should be used wherever possible, and in fingers where there are none, the holes must be polished smoothly so that there are no burrs or nicks to catch the yarns. When putting in a new finger, it is a good idea to grind the back part of the seat and make it narrower. This will give more clearance for the change levers and lessen the chances of their binding. Polish the tip of the change lever and the part of the finger where it bears, so there is the least amount of friction. Even though these are both hardened, any little nick on one will soon wear a groove in the other and give trouble. This is especially necessary on the splicing finger, which, if it works hard, often moves the carrier ring back and forth, having a detrimental effect on the needles. A smooth surface can be given to these with a small oil stone.

The pins should fit in the fingers and change levers so there is no chance for side play. If they are wobbly on the pins, the fingers are likely to bind on the next change lever, and vice versa. The finger-springs should have ample clearance and seat in the middle of the finger. Sometimes they are oversize, or the holes are not drilled correctly, and it is necessary to grind them down a trifle. When they are off center there is a possibility that the spring will catch on the next finger, reducing the tension on the finger for which it is intended. The finger will snap in part way and then slowly complete its downward movement to the seating place.

The wires seldom break unless the quadrant continually rubs on them, which can be eliminated by bending them and at the same time retaining a nice free movement. It is also possible to bend the drum levers to the right more than they are when the machines are received from the factory. Take an old piece of stock; cut a groove in one end and drill a hole in the other end for a handle similar to a socket wrench, by means of which they can be bent without binding them in the guide.

Should it be necessary to raise or lower all the fingers at any time it can easily be done by driving the drum lever stud (195), in, or out, a little, as the case may be. The drum cams as they come from the factory are usually beveled on the ends and these

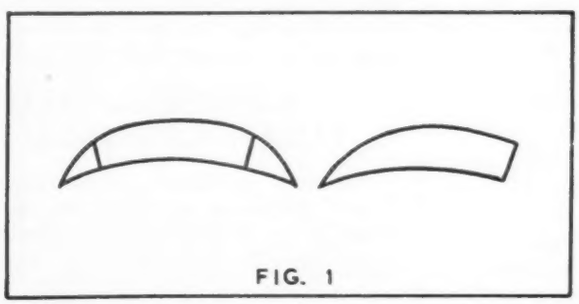

FIG. 1

should be cut off square, as indicated in Fig. 1, so the finger will drop in with a snap and not with that slow, gliding movement. This will help to reduce trouble at the yarn changes and make it possible to secure a very short splice.

When the striper is being used, the fingers should first be set to clear the needles in the heel and toe, and not have the levers resting on the striper drum at this point. Then when the machine is in the boot, the levers can be set by moving the stud, which is on an eccentric, to hold the fingers at the required height. If enough adjustment cannot be secured with the stud, the levers can be bent considerably before they will break. By setting the striper drum so the levers are holding just halfway on the cams with the fingers being held about one-inch above the seat of the mouthpiece, a short splice of only a few needles can be secured at the yarn changes, but the fingers must be raised high enough to get the yarns under the binder, especially when two yarns are used in one finger as the back yarn comes out one or two needles later than the front yarn.

BANNERMAN.

[This is the third of a series on Banner machines. The next will appear in an early issue.—The Editor.]

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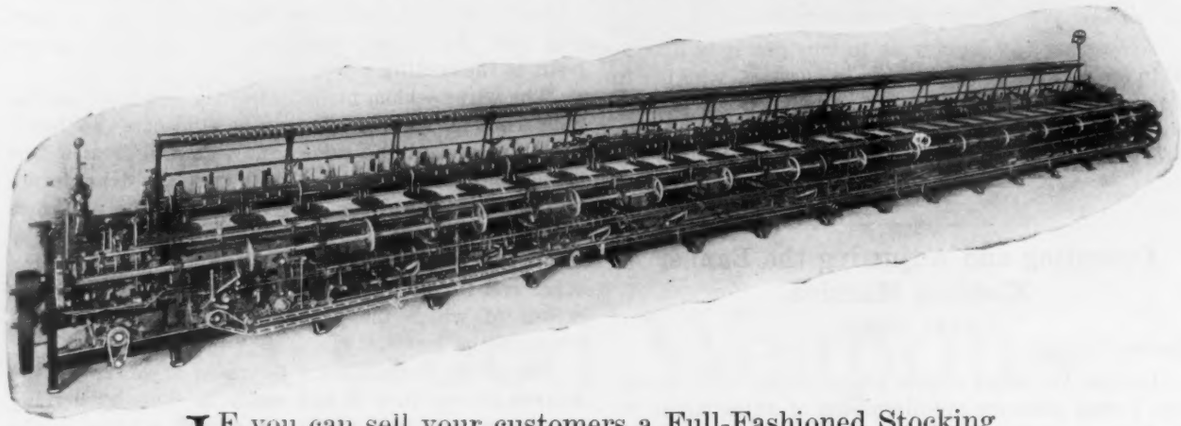

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Cleaning Full-Fashioned Machines.

EDITOR COTTON:

In answer to "CONTRIBUTOR No. 4075", in reference to methods for cleaning full-fashioned hosiery equipment, we take it he is most seriously interested in the big task of keeping his full-fashioned knitting machines clean.

This subject was made the major study on a tour of northern full-fashioned mills recently, and the methods applied were various.

One large plant, with a daily output of 3,500 dozens a day of ladies' hose, employed a gang of seven men and a foreman. The foreman kept a log of each machine cleaned on his floor; estimated which legger would next take off a set; informed the knitter that he would be the next man stopped for cleaning, and as soon as the set came off the machine, the gang started in. Two cleaners, best adapted and trained, were put on the snappers, drop wires and rings, thread dividing wires, and all parts above the narrowing machine that could be reached from the front. One man worked along with them at the back, cleaning the tension cups and pads, yarn containers, and yarn board, and all parts most conveniently reached from the back of the machine. Two men cleaned the friction boxes, friction rods, carrier rods, narrowing machine, catchbar, heads, needle bars and carriers. Two men, each on a low-castered sitting truck (14 inches square on the top); one man in the front the other on the back, rolled along and cleaned all parts below the parts mentioned, wiping up the floor and the drip pans directly beneath the machine, as well as all shafting and bearings and the standards. They also noted and reported excessive ends or threads wrapped around cam rollers and any cam rollers that were not working freely, or that had flat places worn on them from not rolling properly; the whole operation taking approximately thirty minutes per machine, and resulting in a job that would take a knitter and helper three or four hours to complete the old way, with all probabilities pointing to a much less satisfactory job.

During this thirty minutes the knitter and helper were busy with pliers turning up the welt bars at the table at the end of the machine, a job that usually gets much less time than is needed to keep the bars in good condition.

At the end of thirty minutes the machine is ready to run. A high priced operator and his helper are again producing on a high priced machine, which used to stand three or four hours under the old plan of cleaning by the knitter and helper.

An interesting cost comparison can be worked out, based upon loss and gain according to the labor cost involved and the production gained, plus a better condition of the machine itself. But, we will not use valuable space for that which anyone may work out for himself.

Another plan that was preferred by a plant with 180 machines, was similar to this one, except that five cleaners were used, and a certain section of each machine was cleaned on each trip around the plant. The knitter was responsible for cleaning the snappers and upper section. The gang, on the first round, cleaned the narrowing machine, friction boxes and rods, carrier rods, heads and catchbar. This part of each machine was cleaned throughout the plant; then on the next round, another part of the machine was cleaned. Average full attention being given each machine every two weeks, this necessitates shorter stopping periods, but these periods occur more frequently. The check-up was not so thorough nor was the job, as a whole, so well done.

One plant, not so large and working only day shift, had all the cleaning done at night by three men.

The problem of cleaning full-fashioned knitting machines involves the necessity of getting as many work hours as possible out of a working week at the cost of as small a loss of time on the part of both a high priced man and a high priced and delicate piece of machinery; machinery that must be kept clean and must be given the best of attention if we would succeed in keeping them in proper condition for making good fabric for not less than ten years before it is necessary to rebuild them.

There will be some lost motion between machines as gang waits for the knitter to finish a set, but an alert cleaning gang leader or foreman, carefully watching for the next machine that will be ready, has the gang ready to snap into it at once, digging in with all the pep available, trusting in a short rest period between jobs.

A practical way of figuring what can be done, is to assume that we have a 100-machine plant working 54 hours a week. Thirty minutes to a machine and four hours allowance per week for lost time between jobs, fills up the week's time.

Our friend also mentions systematic oiling of full-fashioned machines. It is a well known fact that the knitter, as an average of his class, does not properly oil his machine even as he knows it should be done. He is on piece work and endeavors to run as much as possible, and stopping as little as possible. Oiling, he knows, is absolutely essential, but his approach to the ideal in this respect falls far short.

Our knitters oil as most knitters do, but we have a trained oiler who goes over all shafting bearings and operating elbow bearings, cam rollers, etc., every day. He reports on a card, direct to the foreman, stuck rollers and any bearings showing rust, due to moisture creeping into them. In this way we are able to follow up in some measure, neglect in the oiling plan.

I earnestly request other men interested in the above questions, to butt in and discuss these things. In this way we can air our difficulties and see better "how other men manage."

CONTRIBUTOR No. 4014.

EDITOR COTTON:

Answering "CONTRIBUTOR No. 4075" with reference to cleaning full-fashioned hosiery equipment. It has always been the policy in our plant to hold the individual knitter responsible for the proper cleaning and oiling of his machine. We run many of our machines day and night. On these jobs both day and night men are jointly responsible.

Fixers in the different rooms check up on the cleanliness and care of the machines daily, but they

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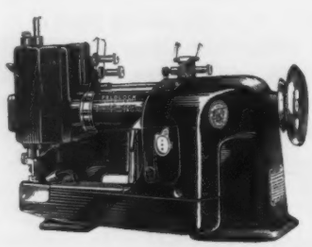

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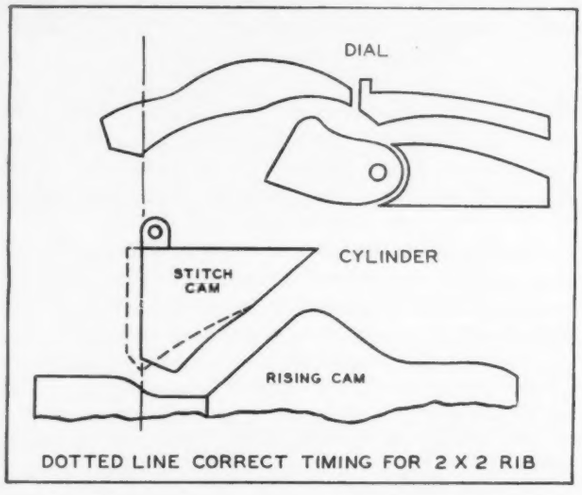
make a particular check the first thing Monday morning. Such machines as are not up to the standard are stopped until the proper cleaning is taken care of. There are some disadvantages in this method, and we have been seriously considering organizing a group of cleaners, whose duties would be to clean all machines in the plant. This would necessitate shutting the machines down for a short period, possibly two or two and one half hours, but I believe it would pay in the end. However, this change has not been made, though it is being very seriously considered.

CONTRIBUTOR NO. 4083.

Preventing Drop Stitches on 2 x 2 Rib Underwear.

EDITOR COTTON:

"CONTRIBUTOR NO. 4098" seems to be having trouble with his Wildman 12-cut 2 x 2 rib underwear machine, making holes and drop stitches. We will consider the machine mechanically in good condition, for a poor machine is of less use than none at all. Therefore, the working face of the cam must be smooth and all the needles perfect. The guides, which are often cut by the cylinder needle, should be smooth and not worn on the heel. Improper setting of the guides causes it to become worn. The guides must be set low enough to the dial needles to prevent their latches closing under it, causing drops. They must also be



DOTTED LINE CORRECT TIMING FOR 2 X 2 RIB

close to the cylinder needles, but not touching them; back, so that, as the cylinder needle latch closes, it just misses the guide.

The stitch is very important. I might mention that, if the machine is a 1 x 1 underwear rib machine and the needles taken out to produce a 2 x 2 rib, it might be necessary to purchase the proper stitch cam and a rising cam for a 2 x 2 rib. The cylinder and dial needles must be correctly timed in relation to each other, according to the accompanying sketch, dotted lines show cam arrangement for a 2 x 2 rib. The cylinder cams must draw enough yarn on the needles for both sets of needles. I believe this statement will explain why the number of holes is increased when the stitch is shortened; that is, if the distance between the cylinder and dial is not too great. A safe distance to set the cylinder and dial is the thickness of needle of the gauge cylinder is cut. Afterwards, this setting may be changed as necessary.

The unequal division, or taking two stitches first on one set of needles and then the other, causes the yarn to vibrate. This must be controlled by some method—eyelet or a guide of some sort. In vibrating or jumping, the yarn, as it goes into the guide, causes many drop stitches, the yarn missing the needle. The longer the stitch hooks, the more vibration there will be. A change in needle velocity sometimes helps. If the stitch is tight the machine must be run at a lower speed than when a loose stitch is being knit. A slight tension on the yarn will help to control it and also improve the plaiting, if properly applied.

Three feeds are plaiting rayon on cotton; the other eight are running plain cotton. These three feeds could draw a slightly longer stitch than the other feeds. There are several reasons for running these feeds this way. First, it is easier on the rayon fiber as the greater strain of the take-up rolls comes on the other eight feeds. Second, in drawing a longer loop the fibers are not so liable to show up rough in the stitch, and the strain becomes less, there would be no holes. And finally, the finish of the goods shows up better by showing up the rayon stripe. Many firms desire this effect.

CONTRIBUTOR NO. 4110.

EDITOR COTTON:

In a recent issue, a correspondent said he is using a 12-cut still head machine knitting 2 x 2 ribbed underwear, plaiting 40s cotton with 200 denier rayon in three feeds. He says he is having trouble with drop stitches and holes.

I am inclined to believe that his greatest trouble is in the time of the machine, that is, the dial needles are not cammed out before the cylinder needles rise, and he is not combining the correct size of yarn and rayon. If he is using in three feeds 200 denier and 40s cotton, he is creating a 15s size, which is entirely too coarse to knit with 40s on the other feeds.

There are other things which also may cause this trouble, such as the tension on the yarn, feeding into the needles. If that is the fault it will show up in streaks in the cloth. He should use the automatic furnishing wheels to correct that pull on the yarn and give a uniform tension.

He says he has tried raising or shortening the cylinder stitches, and it seems to me this would help, as well as swinging the head so as to make the dial needles cam out in proper relationship to the cylinder needles. If the take-up is tight it will also cause holes.

I imagine that these holes are not in line, but are scattered all over the fabric. There is also the possibility that the dial cam may be casting off too far. Is he certain that all the cams are pulling evenly? I would suggest that he caliper them. This is much more accurate than measurement by marking the yarn.

The yarn guides may not be set close enough in the rear or surrounding the needles, and the rayon should feed into the needles in a hole in the guide by itself. My experience has proven that to run 2 x 2 cloth, a

sort of swiss rib cam for the cylinder gives the best results. Very good results are also obtained by blanking off one feed in the cap and the next feed to it on the cylinder. To blank off the feed on the cap is most generally used. The speed should be about 60 revolutions per minute.

The foregoing also applies to spring needles, only that sinkers are used as well as knock-over cams, but the principles involved are the same.

CONTRIBUTOR No. 4107.

Conditioning Rayon for Knitting.

EDITOR COTTON:

To secure the most satisfactory results in knitting rayon it is necessary to soften the material with oil or oil emulsions. Many preparations have been put upon the market under quite a variety of names, all of which accomplish the same result in softening the yarns, but some of them have caused trouble in the finishing processes due to their failure to emulsify properly. A very common way of treating rayon is to use olive oil and kerosene mixed in the proportions of one part of olive oil and two parts of kerosene.

Whatever the softening agent used, application is made by one of the following methods: (1) spraying, (2) the wick method, (3) the roller method, (4) partially dipping the skeins, (5) soaking in oil emulsion.

Spraying: In spraying rayon a small hand-spraying outfit may be used in delivering the softener to the rayon skeins. Application is therefore made in an atomized form and a very even distribution is secured. In this treatment the skeins are usually opened out and laid flat upon a table or tray and the spraying distributed as evenly as possible over the entire area. The skeins are then turned over and the operation repeated to insure even penetration.
which floats off in the surrounding atmosphere, as

This method has the disadvantage of loss of oil well as the disagreeableness of having the atmosphere saturated with oil. This condition may be somewhat overcome by having a tin hood constructed over the table to prevent the oil particles from floating away. Since some loss is bound to occur in this way, there is no way of measuring the quantity of oil actually applied in this way except by weighing the skeins and determining the gain in weight.

There is also the possibility of air currents disturbing the filaments and tangling the skeins since they are in an open condition. Especially is this true in case an electric spray is used. Unless great care is exercised the distribution will not be even. However, this method is used by some mills with very satisfactory results.

The Wick Method: A very common method of applying conditioning oil is by use of an absorbent wick over which the yarn is passed in winding. The lower end of the wick is kept immersed in oil and if the thread is kept under uniform tension a very even distribution of the mixture will result. The amount of oil applied depends largely upon its fluidity and the compactness of the wick. A porous wick will deposit a greater amount of the softening agent than a more compact one. This method cannot be used with the best results on machines which do not wind the yarn at a constant speed. In filling a cone which rotates at a constant speed the velocity of the thread and the rate of winding gradually increases so that the outside layers of the cone will contain less oil since the time of contact with the wick is less for each yard.

The Roller Method: The roller method is similar to the wick method in that the softener is applied to the individual strand of yarn in passing over it. Different types of rollers are used, but a metal roller seems to give better results. Rollers covered with flannel are sometimes used but they have a tendency to become grooved and cause damage to the filaments. There is also a chance for the tension to vary due to changes in the texture of the fabric with use.

In any case the rollers usually extend the full length of the frame and are revolved with the lower half immersed in a trough of oil. Guides are set so as to cause the threads to make contact with the roller over an area of about 45 degrees.

Partially Immersing the Skeins: A method which is also used to some extent is to dip the ends of the skeins into the softening agent and allow to hang on a rod for twenty-four hours. This permits the oil to penetrate the entire skein. The strands of rayon act as tiny wicks and if the moistened end of the skein is kept above the other, the combined action of gravity and capillarity will give very uniform results.

This method of softening has the advantage of requiring less handling and disturbance than any other method. Other methods require the use of hydro-extractors in removing the excess oil with the result that tangling of the skeins often follows. If reasonable care is taken in applying the softener by seeing that equal portions of the skein are immersed, and that all skeins remain the same length of time, this method will be found very satisfactory.

The Emulsion Bath: Preparations which emulsify in water are sometimes used in softening rayon. This has the effect of diluting the oil with the result that very even spreading of a small amount may be accomplished. The skeins must of course be hydro-extracted and permitted to dry before winding. It is not advisable to wind rayon in a damp condition due to the danger of stretching it. However, a slight amount of moisture with the oil gives better results on the knitting machines and rayon should be used before it loses all the excess moisture.

Treatment of Yarns on Cones: Rayon on cones may be satisfactorily conditioned by immersing the cones in any good conditioning mixture and permitting them to soak for about thirty minutes. They are then removed, placed on a screen and the excess oil allowed to drain off. In immersing the cones, it is best to leave the tip of the cone projecting above the surface of the mixture in order that its smoothness may not be destroyed. It also serves to support the remainder of the cone which is considerably weakened by wetting. Cones treated in this manner should not be used for several days, as more time is required for the yarn to evenly absorb the oil in the more compact form.

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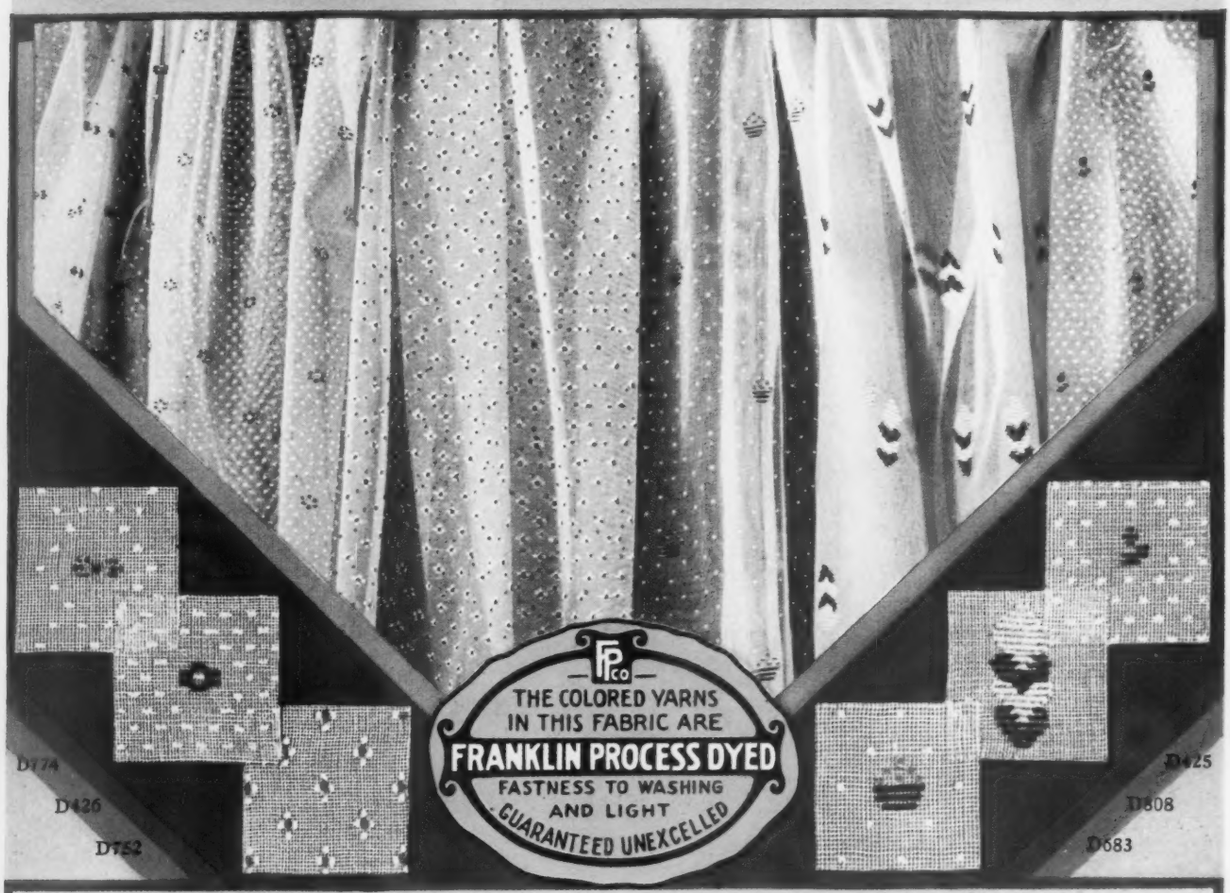

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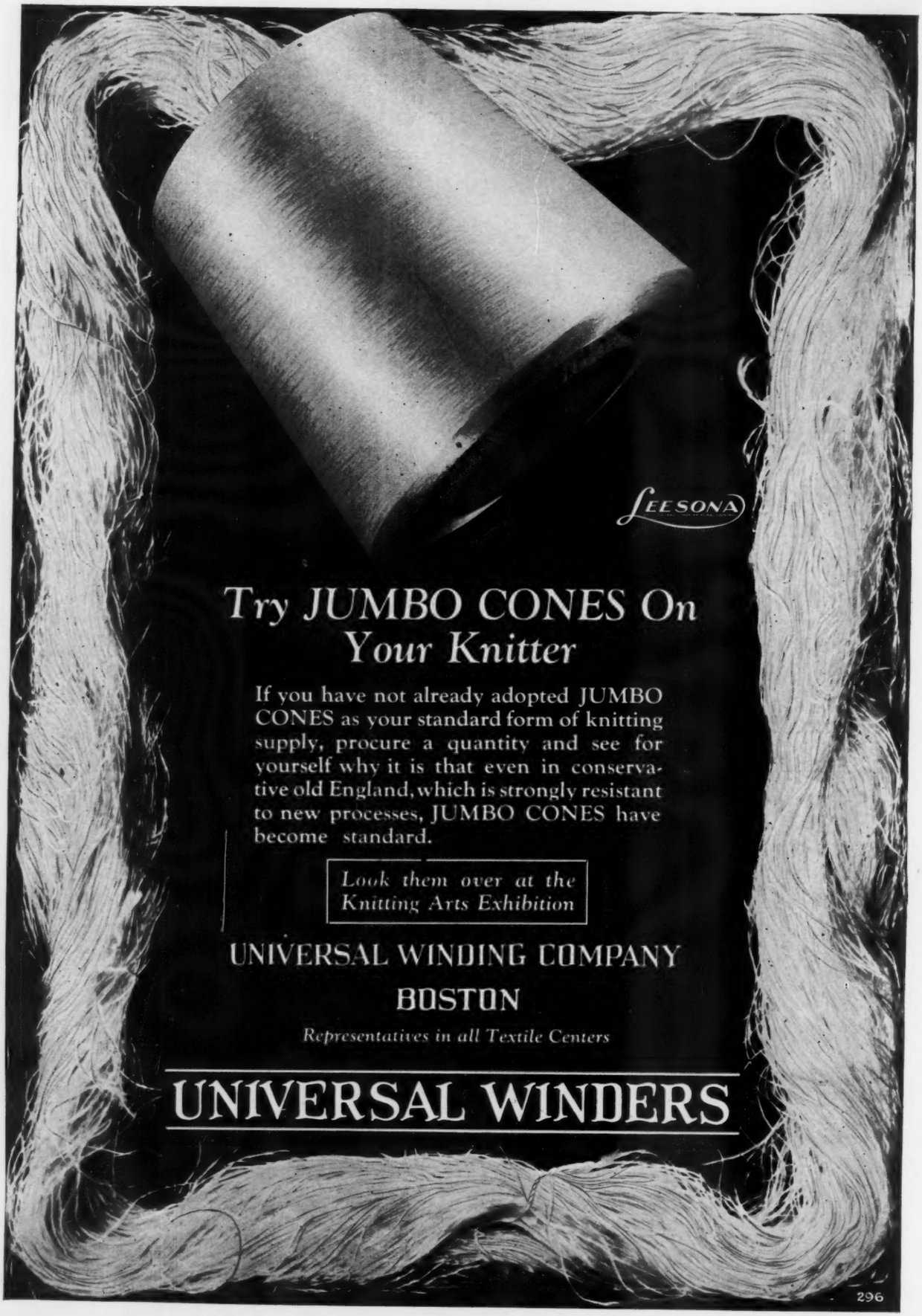
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Preparing Silk for Full-Fashioned.

EDITOR COTTON:

"CONTRIBUTOR No. 4125" has asked five questions on the preparing of silk for full-fashioned knitting, which I will answer in rotation.

> "We would like to know in soaking silk for full-fashioned trade, whether it is better to use a sulphonated prepared oil or better to use neatsfoot oil and olive oil soap or olive oil and olive oil soap?"

This is a question on throwing and of course is something which could cause considerable criticism or discussion, as all these methods are used by throwsters, and some like one method of soaking and others like another. In answering this question I can merely give the contributor the formula of the soaking I have used for many years. I might say that it has given me the most satisfactory results. The formula of this soaking solution is as follows: A prepared sulphonated neatsfoot oil, 50 per cent; raw neatsfoot oil, 25 per cent; and tasteless white mineral oil, 25 per cent. The advantages of using a prepared sulphonated neatsfoot oil and raw neatsfoot oil over olive oil or olive oil soap is that by using these oils there is less moisture content.

Some olive oil soap is added to this solution and the amount of soap to be used should be determined by the throwster. I know that some throwsters are afraid of using mineral oil, and if such is the case, one can use 50 per cent prepared sulphonated neatsfoot oil and 50 per cent raw neatsfoot oil. I have always been told that prepared sulphonated oil should be used. I understand that these oils can be prepared by the throwster, but there is a danger unless an experienced chemist does the mixing so that he can determine the degree of sulphonation of the sulphonated oil and the free fatty acid in the raw oil.

> "What kind of backwinding solution do you recommend?"

In answer to this question, I might say that in my opinion the best and safest solution is the same oils that are used in the soaking of the silk, making about a one per cent solution for back-winding. There are several good products on the market for backwinding solutions, but I am sure that the readers will agree with me that if the soaking of the solution is right that the same solution can be used for backwinding. A throwster would be always glad to furnish the oils prepared for such a solution and all that is necessary is to use one per cent of these oils with 100 per cent of soft water.

> "Have you ever tried glycerine back wound solution, and with what results?
> "In allowing backwound silk to stand for several hours, how do you prevent sticking yarn?
> "Will a very soft cone prevent this?"

All of these questions can be answered as one. Glycerine should never be used in a backwinding solution as this will always cause stickiness in silk. Winding soft cones over a glycerine solution and using silk as fast as wound over such a solution, will not prevent sticky silk. I certainly would recommend to the contributor that if he is using glycerine in his backwinding solution, that he stop on this at once, as that is without a question of doubt the cause of the stickiness.

Some of the prepared compounds on the market for making solutions I know contain glycerine, but its preparation with other oils is such that it does not cause trouble. I wish to caution the readers not to use pure glycerine, as this will cause no end of trouble in the knitting. If silk is soaked or conditioned right and wound over a proper solution, it can stand for days, as well as hours, without becoming sticky and by winding cones soft, the silk will leave the cone with an even tension and result in good fabric being made on the knitting machines.

C. H. BAXTER.

Dissolving Rayon in Mixed Fabric.

(Editor's Note.—A correspondent recently asked whether it is possible to dissolve viscose or Bemberg rayon in a mixed fabric of rayon and cotton, leaving the cotton unchanged. This was submitted to several other contributors, the consensus of the replies being that up to the present no general method has been evolved which will perform this work. One of the replies is presented below.)

EDITOR COTTON:

You recently submitted the following inquiry:

"What chemical solution will dissolve viscose rayon or Bemberg in a mixed fabric of rayon and cotton, leaving the cotton unchanged?"

In endeavoring to answer this we tried several simple tests:

1. Caustic soda made up 3 to 100 at a boil, followed by treatment with carbon disulphide;
2. Carbon disulphide followed by a caustic boil;
3. Acetone;
4. Sodium sulphide solution boil out;
5. Glacial acetic acid.

All of these tests gave negative results. Negative results were to be expected, as all three fibers are cellulose, the Bemberg being a fiber made by use of the cupra-ammonium process, the viscose by the xanthate process and both being regenerated cellulose in the finished product, which is similar, of course, to the straight cotton fiber.

It might be possible to separate these fibers if treated in a kier under pressure with caustic soda to disintegrate the rayons before the cotton is affected. This is simply theory, however, as I have been unable to find information in my possession which would cover the subject.

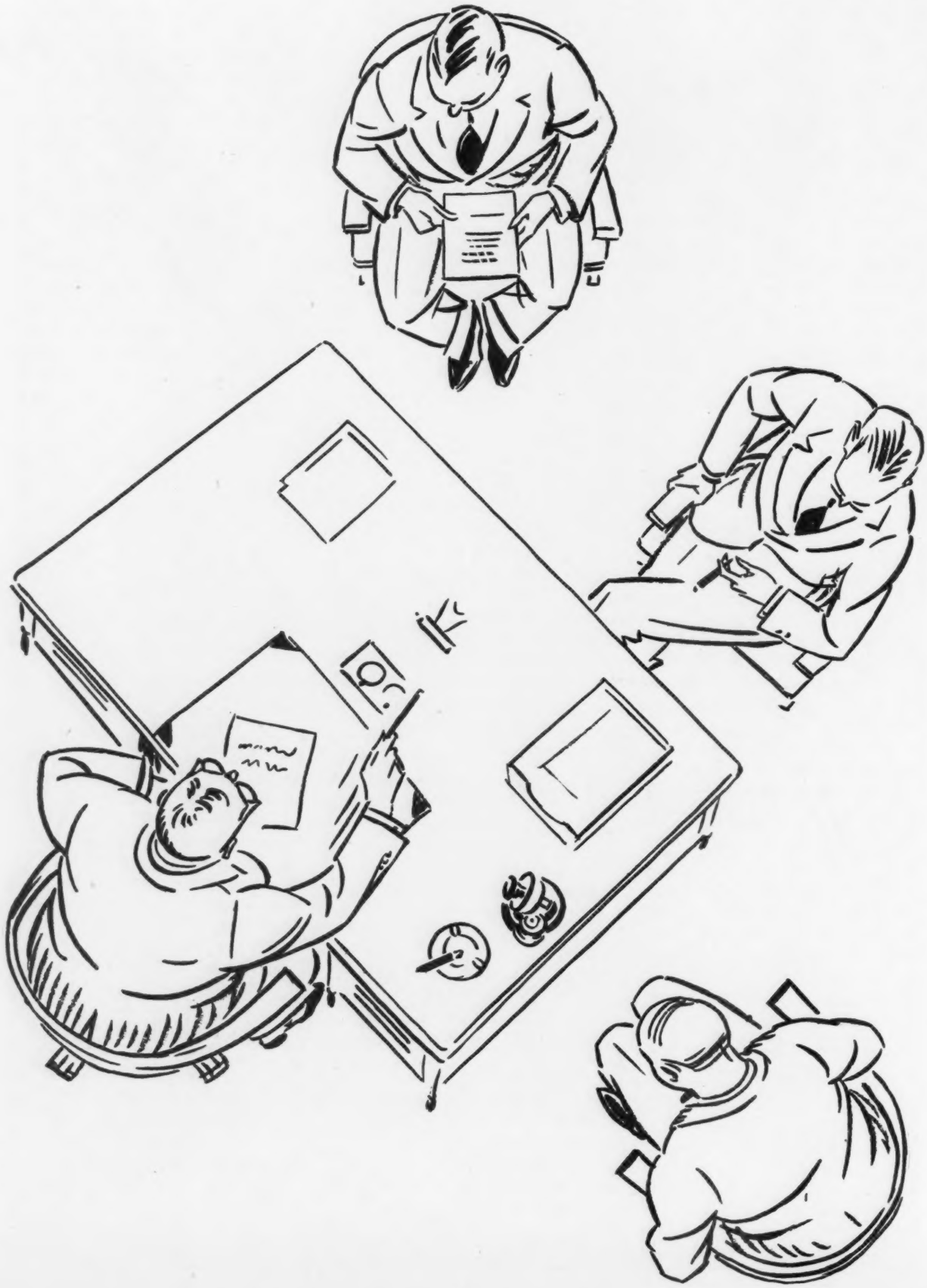
CONTRIBUTOR No. 4141.

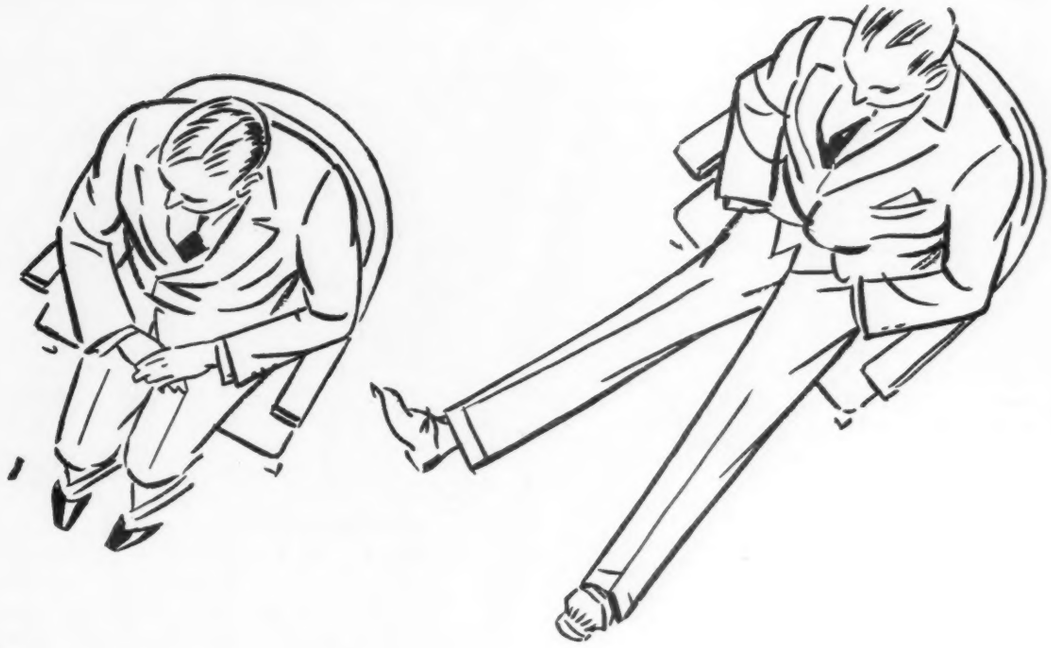
Knit Underwear Manufacturers Announce New Knitting Machine.

Byron G. Moon, director of the Merchandising-Advertising Department of the Associated Knit Underwear Manufacturrs of America, has announced the completion of a new knitting machine capable of knitting vertical and horizontal stripes and designs in white and in combinations of colors in knit underwear fabrics.

New Dupont Folder.

E. I. Du Pont de Nemours & Company, Dyestuffs Department, Wilmington, Delaware, has issued a leaflet on DuPont Methylene Blue N, a basic blue used almost entirely for textile printing, it is stated. The company states that the color possesses brilliant and excellent solubility, permitting the preparation of a uniform printing paste.





Voice from the Ohio territory: *"I think we'd get a lot more repeat business from women if the trademark on our hosiery was permanent."*

Voice from Texas: *"I check with that. The mark we're using washes off, and women forget what brand they've been wearing."*

Sales Manager: *"Good suggestion. I'll take it up with Kaumagraph. They probably have some sort of permanent transfer—and if they haven't they'll work one up for us."*

FOR over 25 years Kaumagraph has been assisting manufacturers on all matters of identification. To meet their individual needs we have developed over a dozen different types of transfers such as permanent transfers, fugitive transfers, indelible transfers, two-color transfers, etc. We have established a large lithographic department . . . . a department of trade mark design . . . . a highly organized laboratory for special problems. You too will find it profitable to consult us on any matter of identification.

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The Knit Goods Market

THE three major divisions of knit goods got into their Spring stride, commercially speaking, after a spell of buyer apathy, more affected than real, probably, ascribed to revisions of prices in the raw material markets. Rayon yarns had been marked down by the producers at a time when worsted yarns were showing evidence of following the recessions in wool. These soft spots in yarns were reflected in a period of more conservative buying of rayon hosiery and worsted sweaters. Underwear responded to advances in cotton yarns, and while activity wavered in some quarters it became more pronounced in others. In the evening up of conditions in the several primary markets a stronger volume of business in silk and cotton hosiery more than offset the declines in rayon and rayon mixture lines. Toward the end of March buyers had become acclimated to the market atmosphere as it was affected by ups and downs in raw materials, and in practically all lines, trading in knit goods was proceeding in good fashion, with manufacturer and merchant keyed up for a lively Spring movement.

Interruption in the markets, while of little moment, was the more perceptible in children's hosiery of rayon and mercerized yarns in combination. Although all the rayon in a dozen pairs of misses' fancy stockings was a very small item in relation to mill cost, buyers seized the opportunity for a mild attack on prices, overlooking the fact that the decline in that fiber was unimportant in contrast with the higher cost of the cotton yarn content. This would seem to have spared manufacturers as a body the necessity for concessions. But some were permitted, as there was another angle from which the near future could be viewed.

There was and still is some uncertainty as to the extent to which young misses' substitution of the ankle hose might affect sales of regulation sports lengths, it being the general consensus that bare limbs will be the vogue for girls in their early 'teens and that boys accustomed to wearing golf hose may yield to the fad.

In spite of the ado over anklets and other incidents which place a handle in the hands of buyers, juvenile hose of the standards set for sports wear is going into distribution about as usual, and infants' socks have been in a stronger position than at the beginning of Spring in a number of years. Some leading manufacturers state that socks of all-rayon are moving in much lighter volume than last year, one estimate being that sales have declined by more than 50 per cent, while mercerized and rayon mixture have made gains that wipe out the deficit in straight rayon. Most mills are sold well ahead and some have declined reorders for certain popular numbers, with the result several jobbers may have to take them out of their lines. Reports from manufacturers make it appear that thus far this has been the best season in socks for some time, production being sold further ahead, in a few instances, to June.

Women's Hosiery Sales Larger With Increases in Production

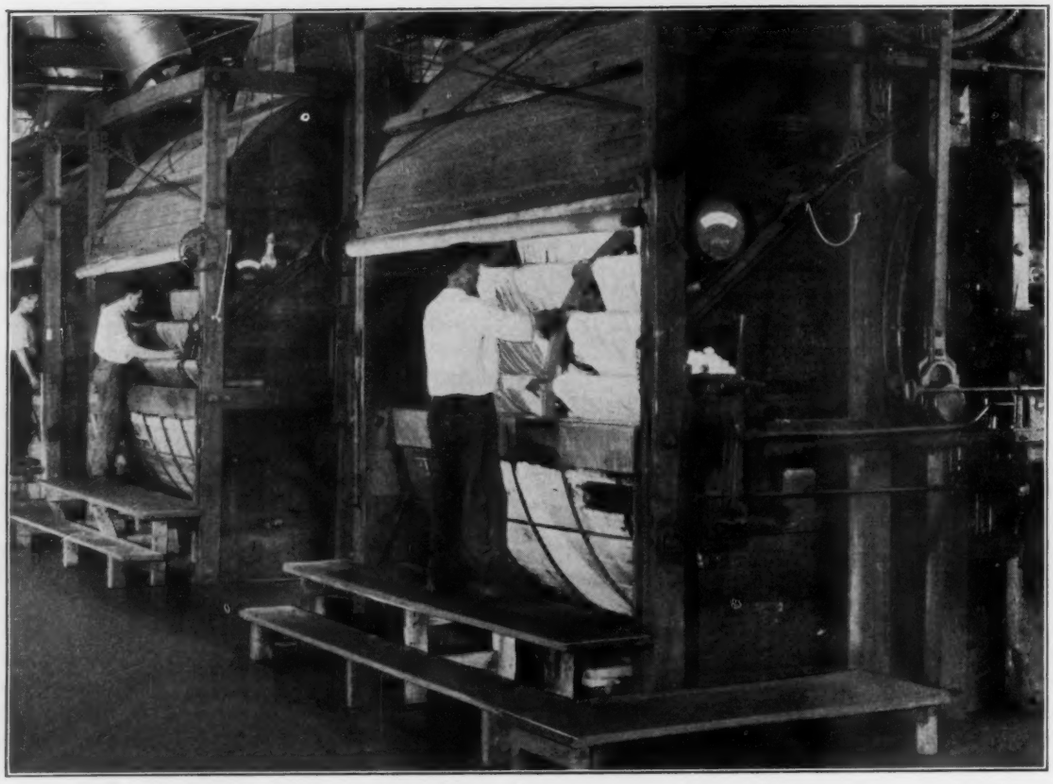
EASTER this year was more generally ignored than usual as marking a period of momentary briskness in women's silk stockings. Yet there was an apparent heavier distribution for Spring than a year ago, and it may be doubted whether all previous records for the movement to retailers were not shattered this year, not only as to pre-Easter shipments, but for the weeks to follow until the usual Summer quiet sets in. The business of mills was pretty well divided as between popular and high price hosiery, from 36- and 39-gauge for the lower brackets to both ingrain and dipdyed in the fine range. It seems worthy of note that in eastern cities where dollar a pair all-over silk has represented a very large volume of sales, a number of stores have made slight departures from that figure, substituting odd prices, such as $1.09.

Competition among retailers had become so keen that some of the larger stores dispensed with special sales at markdowns, maintaining profits were so thin that the customary half-page advertisements were not warranted, and there was less than this kind of broadcasting, with the result, it is stated, sales during March were disappointing to some department stores. The public was buying hosiery nevertheless, as indicated in constant pressure on mills, waiting for neither Easter specialties or bargains in staples. Mills generally are working on forward orders, and no letdown in the stage of plant operation during April and May is foreseen.

Markets Are Active on Seamless and Full-Fashioned

VIEWED as a whole, the markets for women's silk, seamless as well as full-fashioned, may be said to be active. There are, however, spots in which this condition is not so pronounced. Demand for mills' staple and more popular numbers has continued unabated, prices remaining steady. Certain types, which it would be difficult to differentiate, were available to odd lot buyers at substantially reduced prices. These were largely in the finer gauge numbers, from manufacturers weak in their marketing organization, it appears in an analysis of trade reports. One of the more active operators in close-outs offered a lot of around 1500 dozens of 45-gauge five thread silk toe to top, with picot edge, for $9.50 a dozen in the gray, or $10.50 in buyers' choice of colors. The latter figure was two dollars a dozen under the price of 45-gauge four thread picot top from a manufacturer selling day and night production to jobbers and large retailers. The stockings at the lower figure were described as perfects. Although the price caused some buyers to be skeptical of the value, they found an outlet profitable to seller. Other incidents of this character came to the surface, but appear to have not affected the situation as to well entrenched staples.

Contrary to custom, there was no slowing down in



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Natural Silk, Mercerized Cotton, or combination of various processes

The reel can be revolved in raised position or while being raised from or lowered into the bath

Also, the reel may be lifted clear of the dye liquor for matching, adding color, and so forth. The reel is always in contact with the drive.

The yarn-carrying frames are phosphor bronze with monel metal rivets and guard rails—the tub which provides support for monel metal lining and insulation is of wood.

Complete details of this Butterworth-K.W. machine will be furnished promptly.

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production in January this year. Comparing with December, it is shown in a tabulation of reports from identical mills, output was increased, and it is noteworthy that the gain in cottons, all classes, was about equal to that in silk, for men and women. Seamless cotton production was larger by approximately 21 per cent and seamless silk by almost 26 per cent, both comparisons applying to women's. The increases in silk and rayon in mixture and all-rayon were less, amounting to about 16 per cent. This narrower gain probably can be ascribed to rumors current in January of reductions in rayon yarns, and which subsequently proved to have been a safe prophecy. The recession was followed by lighter trading in rayon hose, for which there had been gathering demand. Manufacturers look for some re-styling and improved construction by which it is expected fair prices will be maintained.

January output of women's full-fashioned shows an indicated increase of 16 per cent over December and a like gain over January, 1928. In the other major lines of women's seamless, production in January this year was less than in the corresponding month of last year, as indicating continued decline in demand for seamless, which, in view of further sharp expansion in full fashioned, would appear as in danger of still some recession this year. That manufacturers in and about Philadelphia look for no serious results from the rapid growth of the full-fashioned industry in the South, notwithstanding the lower operating cost there, is evidenced in the number of new mills planned and in course of erection, and additions to some of the older plants.

While there is a definite trend to 42- and 45-gauge hosiery, there is seen no abatement in demand for 39, offered in all silk numbers at $9.50 to $9.75 a dozen, commonly supposed to sell for a dollar to $1.15 a pair. Manufacturers of 39 are credited with producing better hosiery than some months ago, and that there is confidence in this gauge is shown in the demand for used machinery. It is an admission among experienced knitters that it is easily possible to produce as good value in 39s as sometimes is found in 42s made for a price adjusted to dealers' notions of value, or, rather, the mark-up to which they feel they are entitled.

Skin Hosiery Developed By Seamless Manufacturers

MANUFACTURERS of seamless silk have created a demand for skin hose, despite antagonism to it as manifest by some important retailers. Skin stockings are designed to appeal to women who may want to affect bare legs in the event they approach the vogue stage for the Summer months. They are priced at from $6.25 to $8 a dozen to jobbers and up to $12 by mills selling to retailers.

Made without heel reinforcement for carrying simulation of nude limbs to its full limit, some of the skin hose has been giving retailers no end of trouble. Complaint is made that the stockings complained of break at the point where they are subjected to strain from the top of the shoe heel, and some dealers have accepted many returns, so many, they say, that profits on the line are minimized. It is pointed out that the stocking heel should be reinforced to a point above the shoe heel, as it is in the numbers of some manufacturers. A few dealers, because of the experience of others, declare they will put no skin hose in their line. There is, however, increasing demand for it.

One objection of dealers to the very sheer nudie stockings is that they will detract from sales of regular chiffons, of four and five thread silk. There would appear some ground for this deduction, as the nudies conform to the idea of sheerness, while also sating the appetite for following the possible vogue. But they can provide for only short service, so that sales should run heavy while the fad lasts. Some say its period of duration will be shorter than that of the black heel, a craze for a time beginning in 1927. In its best construction, dealers hardly can sell it under the usual guarantee, and even if there be no warranty, the returns from dissatisfied customers may be expected to chill retailer interest in it.

Elated at their success in exploiting circular knit silk hose without the seamed back, some manufacturers believe they have driven the entering wedge for reinstating the absolutely seamless in favor, particularly since the introduction of 320-needle machines. They bank on present interest in the no-seam stocking of skin sheerness and say they believe that interest will grow with the return to standard weight fabric for chiffons and medium service weight. Optimism over the possibilities is quite pronounced in certain restricted quarters where it is purposed to undo the mischief that was done when the seamless knit was being cheapened for a price.

F. Y. Kitzmiller, who has been a consistent believer in the circular knit, has gone so far as to lay plans for producing an ingrain number, which retailers are expected to pass over the counter for $2.75 a pair. This would be a distinct innovation, one to be approached with much caution, judging from the small volume of business comparatively in full-fashioned ingrain, estimated to be less than five per cent of the whole in full-fashioned silk.

Ingrain silk stockings were offered a few weeks ago by an odd lot dealer for $8 a dozen below the price for which the number had been selling. It was explained they had been in stock for some time and were in danger of deterioration. While the offering was mainly of women's it included a lot of men's full-fash-

---

J. L. CAMPBELL is building a full-fashioned hosiery mill in Lambertville, N. J., about 20 miles out of Philadelphia, and probably will have it in operation before the end of Summer. He recently severed connection with the Chalfont (Pa.) Hosiery Mills, of which he was president. He will install either 42 or 45-gauge machines. The Chalfont mill knits 42s, in medium service weight.

JOHN B. BRUHY and Joseph Richie are having plans prepared for a full-fashioned hosiery mill to be erected within the next eight weeks at G and Lycoming streets, Philadelphia. They have ten Reading 45 gauge machines on order and expect to have the first set in operation some time during the summer. Mr. Bruhy was president and Mr. Richie treasurer of the Olympia Full Fashioned Silk Hosiery Mills, Philadelphia, until recently.

ioned half-hose, priced for quick clearance at $3.37½ a dozen, which is less than the market for 12 thread seamless of good construction. The half hose was described as knitted of two ends of 11-thread silk, and of course found a buyer.

A Philadelphia manufacturer of women's ingrain silk is reported having discontinued the number, and it is understood he has, so far as producing it. Prices had declined in competition to a level said to be not profitable. The manufacturer is installing 45-gauge machines which he states will be used for knitting hosiery to be dipdyed.

Cotton-Rayon Mixture Popular Number in Men's Half Hose

CONSIDERED from the standpoint of increasing production, men's half-hose of cotton in combination with rayon continues to maintain a strong lead in volume of sales. Comparing with output in January a year ago, that month this year indicated a 100 per cent gain, and went forward by 36 per cent as compared with December last. All-rayon appears somewhat slower, while silk and rayon in combination is moving ahead as a popular price number in the in-between bracket. What seems like a phenomenal gain was scored by cotton half-hose, including mercerized. For January, comparing with December, the indicated increase was in the neighborhood of 20 per cent, which is conceded in the trade to be a remarkable showing, considering the enormity of the business in fancies and practically no fluctuation in production of plain color silk.

With right good fancies selling in chain stores for 20 cents a pair, distributors are inclined to proceed conservatively in commitments for novelties. But it appears that while chain stores are the really big outlet for low end fancies, there is no falling away in demand for classes which the chains do not handle, and the product of spiral float machines, for the lower range, does not go begging for a market. Southern mills continue to acquire more and more of this business, as in women's rayons, northern manufacturers stating that the latter, made in Pennsylvania mills, returns profits so meager that it looks as if the line will be left to the South for an almost complete monopoly.

Combed half-hose is proving for several mills a fairly profitable proposition for the catalog house trade. One large establishment had been doing a volume business in sales of three pairs for 55 cents, yet discontinued the number of a mill specializing in combed, because a competing catalog house exploited it for 45 cents for three pairs. The stockings are understood to yield the manufacturer around $1.40 a dozen, the mail order concern therefore getting away with only a thin margin of profit. A buyer, connection not disclosed, was a few weeks ago offering a sizeable order for boys' sizes of combed and mercerized, in black only.

Competition in the better classes of men's novelty socks seems to have brought even an important manufacturer in the South to his knees. Only a few years ago he was getting $6 a dozen for a line which, comparable in construction, now goes to distributors for $3 a dozen, after selling for a time for a quarter more. Jobbers are said to have forced the three dollar price, said to be the mill's minimum. It is stated by a selling agent for the mill that it will hereafter sell direct, on the ground that price makes it necessary to discontinue paying commissions.

Interest in Wool Hose Reported Harder to Arouse than Last Year

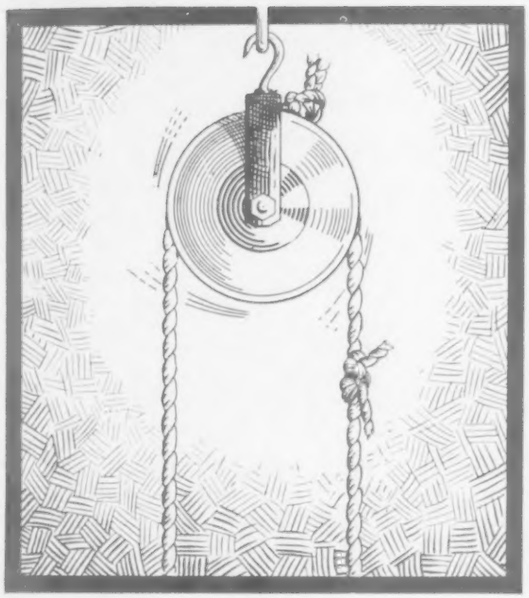
ON the market for some weeks, wool hose, for men and women, has received but scant attention from wholesalers, it is stated by persons speaking for a few representative Eastern mills. Some say it is being bought for Fall about as usual in the Spring period, but that prices are lower, by four to seven per cent for average good lines of so-called silk-and-wool. That the market would open on recessions was expected, with raw wool gradually becoming easier and declining rather sharply in recent weeks.

The bulk of the business in silk-wool lines is in men's half-hose, which, dealers predict, will be used as extensively as in recent winters. There has been some re-styling, by which the wool socks are expected to make a stronger appeal than ordinarily. But it appears that back of the apathy toward women's there is more than the softening in worsted and woolen yarn prices—anticipation that next Winter anklets, or pullovers, worn over silk stockings, will displace much of the regulation silk-and-wool. Anklets have scored a hit not parallelled in any recent novelty, and if the craze for them continues throughout Spring and Fall, it is reasoned, they stand a good chance of being adopted for winter wear, in which event women's wool hose would stand an equal chance of being bowled out.

Cotton Underwear Prices Firmer on a Stiffening in the Raw Fiber

AN executive of a large underwear manufacturing concern said, while commenting on jobbers' half-hearted appreciation of values, "jobbers who cannot sell underwear this year ought to give up trying." What was in his mind, as he afterward explained, was that mills which shortly after the opening reduced prices when buyers were disposed to defer placing contracts, simply had given over profits to distributors. As is pointed out, average March value of cotton was a full two cents higher than a year ago. Underwear opened slightly lower, and prices of some mills are lower now than at the opening. But reductions were checked by rising cotton, and thus one cause for market disturbance is disposed of, while jobbers are provided with opportunity for larger profit. Yet contracts are being withheld, although there is much improvement in sales since February.

Some fair size reorder business was taken as recently as six to eight weeks ago, from which it is to be inferred retailers still were calling for heavy weights and may be assumed to have no carryover. This jibed with reports many are placing Fall orders earlier than usual, which makes it all the more surprising that not all jobbers are operating. One very satisfactory aspect of the situation is that orders placed to March will stick, and that prices for the second delivery period can be easily maintained, barring any sharp decline in raw material. Another develop-



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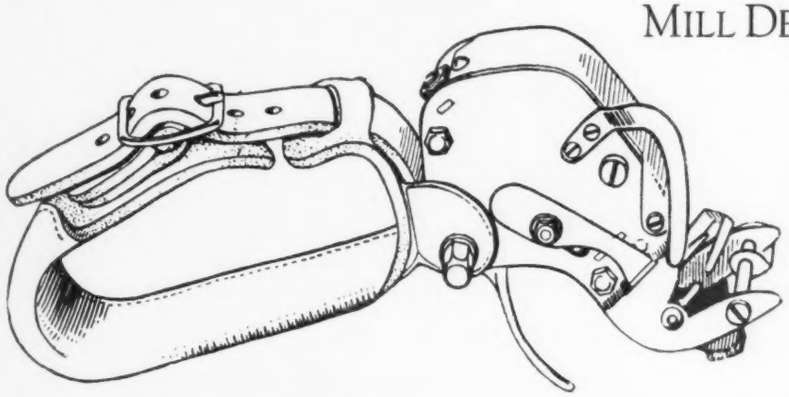

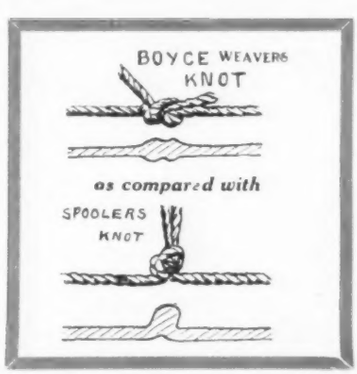

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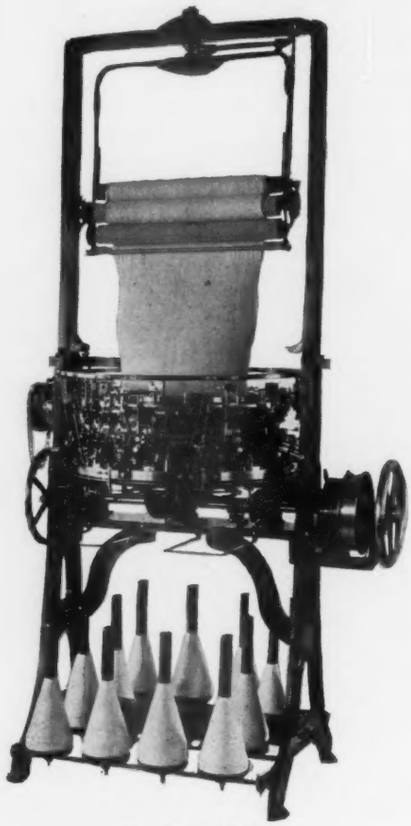

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Spring Needle Rib Top Machine with Stop Motion.

Cooper's High Speed Latch Needles
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and
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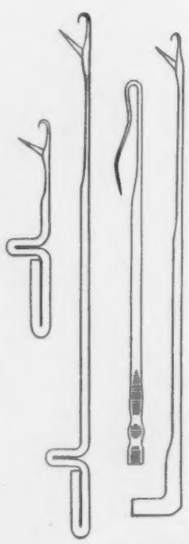

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M. BUCHSBAUM, Calle Alsina 1814, Buenos Aires, Argentina.

ment not encouraging to waiting jobbers is that lines which were withdrawn for the first delivery period have remained withdrawn.

Will demand for previous weights continue? was asked of several leading mill executives. They all expressed the opinion there would be no diminution in sales of 16-pound union suits and 11-pound shirts and drawers, and one stated that not only will the 16-pound suits go into distribution as heavily as last year, but that, considering the drift to lighter weights as a general proposition, there is a fair amount of business in 18-pound suits. It is a major opinion among manufacturers and distributors that 1929 will finish as a "big year in underwear."

Advances in cotton continuing over a period of some weeks gave a stimulus to trading in light weight knitted cotton underwear. Some of the mills with outstanding lines already have felt a pressure for deliveries. They have sold and shipped more cases than to the end of March, 1928, and reorders are heavier, for one reason, most jobbers bought ultra-conservatively at the outset. The two button union suit is one of the stronger numbers of a nationally known mill distinctive for its number of styles. Rayons for men are making gains, but they are not so wide as was looked for, since manufacturers have been giving more attention to style diversity in cottons and adapting their product to the athletic vogue.

Rayon underwear for women is given a lift by the use of dull luster yarn and the production of fabric less susceptible to damage in laundering. Besides, manufacturers of rayons are giving them a more appealing trim and finish, matching that of silk underwear in its palmiest days. It is stated by producers of both rayon and cotton underwear that it appears to them rayon this year will make further inroads on cotton. Jobbers, it is alleged, exact a wider margin of profit, on the ground that offerings of rayons meet with less resistance and that additional compensation for pushing cottons ought to be expected.

Nainsook athletic suits for man are regarded among trade factors as having harder sledding in competition with the knitted, and it is understood that, while the lines of a few manufacturers who have adhered to high standards are moving about as well as last year, there are some cumbersome holdings of low end goods. Some importance is given to the fact that one well known northern manufacturer of nainsook union suits somewhat recently began making women's cotton house dresses and coveralls for children, which, however, cannot be regarded as conclusive that his line of nainsook underwear, among the better known brands, is in diminishing sales.

Knitted Outerwear Moving Forward After a Restful Period in Markets

SWEATER mills have had a good Spring season. Women's light weight worsteds are among the more active items, along with knitted skirts, for the ensemble. So far as relates to bookings, the Spring business in sweaters is in the background, with mills still well engaged in completion of orders. This is the case also as to bathing suits, in which business has not bulked as large as was anticipated. An early season at the resorts should be productive of a fair volume of reorders. Probably more bathing suits have already gone into distribution this year than to a corresponding date in 1928, but there were more mills to make them, and as style was the factor in sales, some manufacturers are approaching the season short of their expected volume.

The markets for sweaters for Fall have suffered some disturbance by reason of the exploitation of cheapened goods, notably in lines of worsted plaited on cotton. It appears now that pure worsted is pushing the cotton-back garments to the wall. In adjusting them to the notion of popular price, some manufacturers increased the proportion of cotton yarn and diminished the worsted veneer. This hurt most all cotton-back lines, with the result, manufacturers who have been specializing in them say, it looks as if the volume business will be in all-worsted.

Shaker knit coats, which for a while were marking time, appear to have moved into about the relative position they occupied last year. There is, however, increasing interest in sports coats, in more models than usual, and these are doing well for mills fortunate in their designs.

Wilcox & Gibbs Enlarge Quarters

ANNOUNCEMENT is made by Frank R. Towle, treasurer and general manager of Willcox & Gibbs Sewing Machine Co., that the organization's main offices and show rooms will be greatly enlarged, due to the rapidly increasing demand of their products. A lease has been taken on the first floor, basement and subbasement at 656 Broadway, New York City, immediately adjoining the original location at 658 Broadway and the total floor space now in use, since the opening of the new quarters, is 35,000 square feet not including the facilities of two large warehouses.

Mr. Towle.

A feature made possible by the new offices is the patent department. The importance of this is indicated by the fact that with 13,000 patents on various types of sewing machines, it is essential that close attention be given this aspect of the business, in furtherance of the company's policy of constantly improving its products. Visitors to the new offices are shown a museum of sewing machines. Exhibited here are all models ever made by the company, from the first single thread machine to the latest high speed equipment. The company also maintains a machine shop, for designing improvements, and a service machine shop, where modifications for particular purposes are worked out.

R. & H. Move Offices.

The Roessler & Hasslacher Chemical Co., Inc., on April 1st moved to larger quarters at 10 East 40th St., New York City. The new location is close to the Grand Central Station, the Baltimore & Ohio Station and the Pennsylvania Station, with the Chemists' Club just around the corner.

ATWOOD OPENS MODERNIZATION DRIVE

Under Pressure of Present-Day Competition, Workers of Silk and Rayon Must *Modernize to Prosper*

Economy Begins with the Throwing

TO-DAY'S methods and machines may be verging on obsolescence. The apparent trend toward modernization is widespread and Atwood is modernizing at every turn, attention focused upon the throwing of silk and rayon . . . checking and testing continually . . . searching always for developments that in any way involve the throwing operations.

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The 1C Rayon Twister . . . the latest development for the twisting of Rayon Yarns . . . a creation by the Atwood engineers.

The 1K Reel, recently inaugurated, is ready for equipping the modern plant.

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The home of Atwood machines in Stonington, Connecticut is headquarters for the vast movement against obsolescence. For years this plant has shipped 80% of the World's Silk and Rayon Throwing Machinery to the four quarters of the globe.

The Yarn Market

Philadelphia, Pa., March 15th, 1929.

WHILE no specific amount of the improvement may be attributed to the occurrence of the Presidential inauguration, it is a fact that after March 4th, conditions in the Philadelphia cotton yarn market got much better, and the time of this writing finds the situation considerably stronger than it was at the beginning of the past month as recorded here. Prices are higher, and firmer, and, generally speaking, there is more active interest on the part of buyers. There are, at the same time, however, many individual exceptions and extreme cases both ways.

The first week of the month just past was nothing for those interested in the disposition of yarns to consider satisfactory. Prices were holding, but most of the rates at which yarns could be moved were too nearly the cost of production to make sales attractive. In addition, there seemed to be less enthusiasm on the part of the buying fraternity. 20s single yarn, carded, was going for a minimum of 36 cents, with 30s/2 warps getting 40 cents or thereabout.

It apparently seemed in order to discuss the need for curtailment of production, as an oversupply of available yarns seemed to exist. Factors pointed out that spinners generally could not pare their rates further and live. This situation applied mainly to the carded members of the group.

On the other hand, combed yarns as a whole were obviously in much better shape, with most of the business coming from the knitting and weaving groups, as the big processing companies seemed to be holding off for a while. For all classes of yarn, however, hand-to-mouth buying seemed more firmly entrenched than ever.

The next week brought the aftermath of the Washington's Birthday holiday, with stronger inquiry that had accumulated. An increase in mercerized yarn rates stimulated the situation for combed yarns in this market, and when cotton, with a period of strength, reached its highest level since last November, it spurred much inquiry and resulted in more favorable sales.

The next week, being the first in March following the inauguration, opened with carded yarns in considerably better demand, and combed numbers were up on an average from one to three cents a pound, depending upon the number in question. The mercerizing companies came more generally into the market which improved the combed yarn selling situation, and the amount of available low-priced carded yarn began to decrease noticeably. Withal, it is reported that there was a good forward business booked, taking the list as a whole. Buyers began to show a greater interest, and the spinners held the prices of both combed and carded yarns with a determined firmness, admitting less concessions to secure orders. All in all, it was evidently less of a buyer's market than had been the case for several weeks previous, and the selling end of the situation seemed to be in a better condition as a result. Just at the close of that week, combed yarns, while manifesting no spurt, mounted to a somewhat firmer basis of price, in the face of improved inquiry and demand.

Last week, canvasses found almost everybody better supplied with business than had been the case, with spinners holding firmly to their newly-established rates, although it was understood that lifting the price ideas of the buying element was by no means an easy task. The sellers seemed determined, however, to maintain their position. Inquiries were frequent, and sales were more numerous, although the amount of yarn involved in each transaction was on the average smaller than has been the case.

Philadelphia prices on March 14th follow:

Single Skein.

4s to 8s	32 @32½	10s	32½ @33
12s	33 @33½	14s	33½ @34
16s	34 @34½	20s	36
24s	38 @38½	26s	38½ @39
30s	40 @41		

Two-Ply Skeins.

8s	32 @32½	10s	32½ @33
12s	33 @33½	14s	33½ @34
16s	34 @34½	20s	36 @36½
24s	38½	26s	39
30s	40½	40s	46½

Single Warps.

10s	33	12s	33½
14s	34	16s	34½
20s	36 @36½	26s	39½
30s	40½ @41½		

Two-Ply Warp.

10s	33 @33½	12s	33½ @34
14s	34½ @35	16s	35½ @36
20s	36½ @37	24s	39
26s	40	30s	41 @41½
40s	47½ @48		

Frame Spun Carded Yarn on Cones.

8s	31	10s	31½ @32
12s	32 @32½	14s	32½ @33
16s	33 @33½	18s	33½ @34
20s	34 @34½	22s	34½ @35
24s	36½	26s	37
30s	39 @39½	40s	46
30s dbl. carded	40½ @41	30s tying in	37 @38

Carpet and Upholstery Yarn in Skeins.

8s and 9s 3-4 hard white warp twist	31½
8s and 9s tinged tubes	29½
8s 3-4 hard twist waste	29

Two-Ply Combed Peeler Skeins and Warps.

8s	45	20s	47 @48
24s	49 @50	30s	52½ @54
40s	56 @58	50s	60 @62
60s	67 @70	70s	77 @80
80s	90 @94		

Single Combed Peeler Yarn on Cones.

18s	43 @44	24s	46 @47
30s	50 @52	36s	53 @54
38s	54 @55	40s	55 @56
50s	58 @60	60s	64 @67
70s	74 @78	80s	86 @89

Mule Spun Carded Yarn on Cones.

10s	37	12s	37½
14s	38	16s	38½
18s	39	20s	39½
24s	41 @42	26s	42 @43
30s	43 @44	40s	51 @52

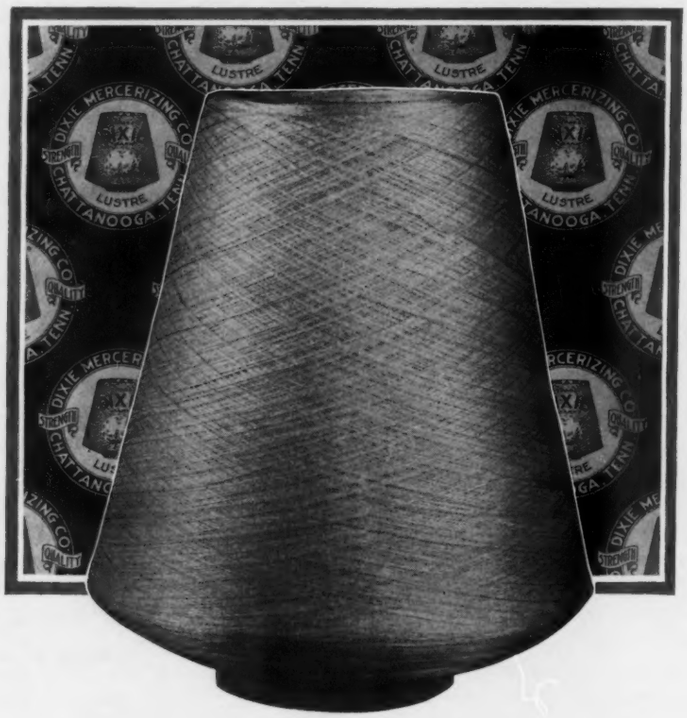
Mule Spun Combed Peeler Yarn on Cones.

10s	45 @46	12s	46 @47
14s	47 @48	16s	48 @49
18s	49 @50	20s	51 @52
22s	52 @53	26s	53 @54
28s	54 @55	30s	55 @57
36s	58 @60	38s	60 @62
40s	61 @64		

Guenther Now Distributing Pyramid Hosiery.

Dr. Paul Guenther, well known in textile trade circles, has opened headquarters for a new selling organization at 267 Fifth Avenue, New York City. He will do business under the name of Paul Guenther, Incorporated, and will act as sole distributor for the Pyramid Hosiery Company, Inc., Rockaway, N. J. This mill is of modern construction and makes only 45-gauge and 51-gauge pure dye ingrain silk hosiery, plain and clocked. Mr. Guenther retired from hosiery manufacturing two years ago, after 30 years of experience in the manufacture of high-grade silk hosiery.

STRENGTH---UNIFORMITY---LUSTRE



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The Dixie Mercerizing Company offers knitters and weavers a complete mercerized yarn service.

DIXIE MERCERIZING CO.

CHATTANOOGA TENNESSEE

Georgia Tech Discussion.

(*Continued from page* 622.)

bar settings between the beaters. In his opinion, more cleaning is secured with an 18-inch three-blade beater than with the Buckley.

V. J. Thompson, superintendent, Manchester Cotton Mills, Manchester, Ga., next reported, stating that he has a 30-inch Buckley next to the hopper, and that he can tell no difference in the smoothness of the lap. He pointed out, however, that "you do not get out as much heavy motes from the blade as you do from the Buckley." He said he had a better break from the Buckley. A test which he reported showed more motes taken out with the blade beater, but, he explained, "the motes from the Buckley were heavier and didn't have nearly as much staple in them. Both beaters were set practically the same way, 5/16-inch from the feed roll. On the blade beater we set the grid bars ½-inch at top and ¾-inch at the bottom, and on the Buckley we set them 5/16-inch all the way." Between the two types of beaters, he said in answer to Mr. Jones, he made no change in the beater or fan speed. Mr. Thompson has a Kirschner in the finisher.

J. A. Bone, overseer of carding, Lanett Mill, reported on a test which he had run. He has a 30-inch cylinder beater in front of the pickers, and his first test showed the following with the hook-up given. 30-inch Buckley (554 r.p.m. with fan speed of 1,558 r.p.m.), .236 per cent motes; 18-inch cylinder beater in breaker, .188 motes; 18-inch cylinder in intermediates, .236 per cent motes; Kirschner in finisher, .213 per cent motes.

Mr. Bone then changed and put a two-blade beater in the intermediate, with the following results: 30-inch Buckley, .236 per cent; 18-inch cylinder beater in breaker, .182 per cent; two-blade beater in intermediate, .112 per cent; and Kirschner beater in finisher, .225 per cent.

In the last test, he substituted blades for the 18-inch cylinder beaters in breaker and intermediate, with the following results: 30-inch Buckley, .190 per cent; two-blade in breaker, .382 per cent; two-blade in intermediate, .144 per cent; Kirschner in finisher, .192 per cent.

He explained that he found more heavy motes and dirt under the cylinder beaters than under the blades. He said he prefers the Kirschner beater for the finisher because it makes a cleaner lap and takes some of the work off of the card. Mr. Elliott asked if he thought the Buckley beater would give as good cleaning with less actual cotton as compared with the blade beater, and Mr. Bone replied in the affirmative.

Claude R. Brown, superintendent, American Textile Co., Atco, Ga., was next asked to report. His reply was somewhat different. He said he had four machines equipped with four 30-inch Buckleys and four blades in the second section on breakers, and another group with nothing but blades in it. According to his experience, there is no difference in the efficiency of the Buckley and blade unless a mill is short of opening equipment. In other words, he said, it depends on the shape the cotton is in when it gets to the break-

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er picker. "We try to do our cleaning in the opener room, as far as possible," he explained, "and when the stock gets to the Buckley there is very little difference; unless you are short of opening equipment I don't believe it pays to run the Buckley.

"In our opener room we run it through a bale breaker, two inclined aprons and two Centrif-Air machines, and we do a lot of cleaning that ordinarily would come out in the Buckley. From the tests I have made there isn't one half of one per cent difference in the amount taken out by the Buckley. Very little difference in the quality, and no difference in the breaking strength. We really get more cleaning, dust, etc., in the opener room than we do in the picker room."

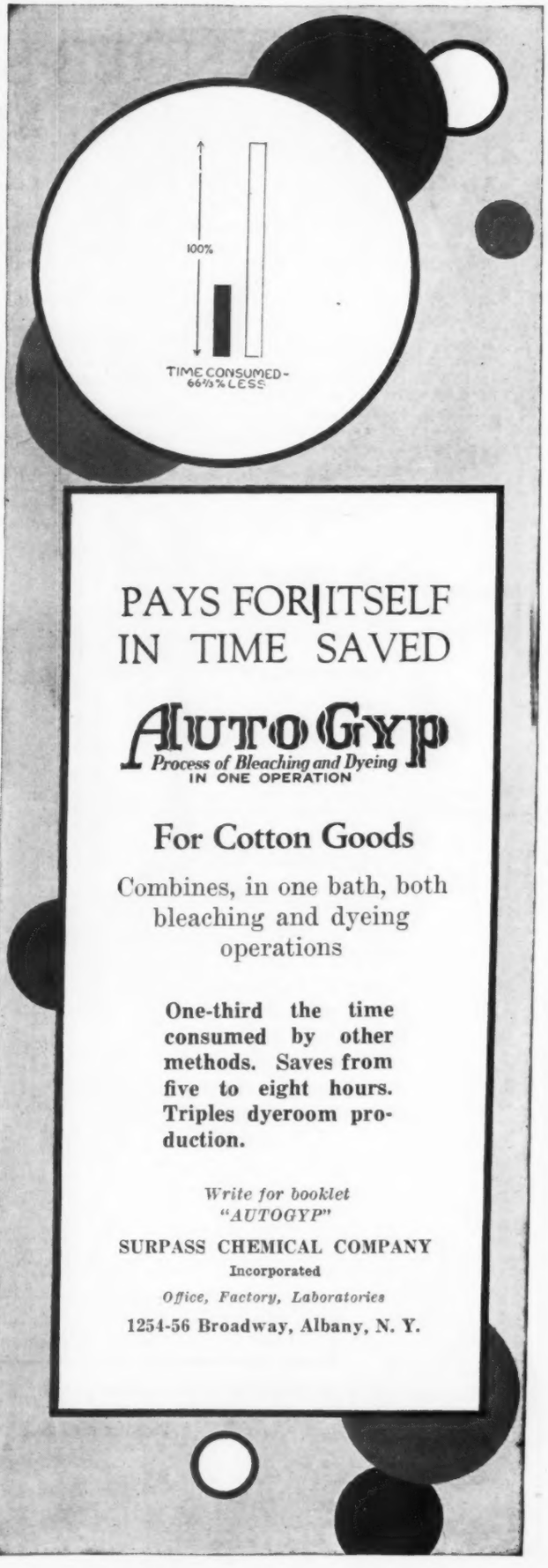
In connection with his opener room lay-out, Mr. Brown said he has another line of equipment with a vertical opener and a Centrif-Air horizontal machine, and that there is no comparison between the amount of stuff taken out by the vertical and the other machine. He said the vertical takes out entirely too much white cotton.

J. C. Edwards of Martha Mill was the next to report, declaring that Mr. Brown had confirmed his opinion and experience with reference to the kind of opening equipment to use. He said he has a No. 12 lattice opener with Buckley beater, after which the cotton goes through a vertical opener and then the type of horizontal opener mentioned by Mr. Brown. He later made the statement that they were now putting two of the horizontal openers in tandem, one replacing the vertical in line, and that in enlarging the plant from 30,000 to 80,000 spindles, they will adopt the horizontal type instead of one vertical and one horizontal. "We find the horizontal machine a mighty fine cleaner," he added.

Referring to his waste tests, Mr. Edwards reported that the waste up to the Buckley beater was .0576. Then comes a two-section Buckley, No. 6 opener, from which he gets .126 per cent in the first section, and .313 in the next. The vertical opener, next in line, gives .285 per cent, and the horizontal machine, next, .326 per cent. Mr. Edwards stated that "it is significant that the horizontal machine, after the cotton passes through the other machines, takes out that much more. This gave a total opener room waste of 1.108 per cent.

Going next to the picker room, where the test was made a week later, and where he has 8 breakers with three-blade beaters running 1020 r.p.m., and 9 finishers with Kirschner beaters, running 955 r.p.m., using only two processes. On the breakers, the screen waste was 53 pounds, motes 321 pounds, and hopper waste 35 pounds, a total of 409 pounds or .236 per cent. The screen waste from the finishers was 51 pounds, motes 370 pounds, a total of 421 pounds or .243 per cent. On this test he had had a total waste through his openers of 1.062 per cent, and adding the waste from the breakers (.236 per cent) and the finishers (.243 per cent) gave him a total waste through and including picking, of 1.541 per cent, a total of 2,660 pounds on 173,100 pounds of cotton put in. On his breaker pickers he gets 38 blows per inch, and on his finishers, 31 blows per inch. He uses 1 1/32-inch Middling cotton.

Mr. Jones asked here if anyone had tried the



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spiked beater in the finisher. Mr. Elliott said he had tried it in all three processes, breaker, intermediate and finisher, and while he liked it on the breaker and intermediate, the results on the finisher were unsatisfactory because it had a tendency to curl the stock there and allowed more or less neps in the card sliver. The breaking strength, he said, was the same.

The next question scheduled for discussion was one-process picking, but, unfortunately, the men to whom the test had been assigned had left the meeting, and there was nothing said about this subject. However, a very interesting discussion of it will be found on page 623 of this issue, in the report of the carding division meeting at Augusta, Ga., on March 15th.

Straight Wire Clothing for Cards.

The next question brought up the new development of using straight wire clothing on the card cylinder, and also the doffer. The first man to report was G. S. Jones, of the Sibley mill, who likewise discussed the subject in detail at the Augusta meeting (see report on page 627 of this issue). Mr. Jones reported that he had had two cards equipped with the straight wire on the doffer since last December; adding that it was an error to assume that the clothing needed no grinding nor stripping. He ground the cards for smoothness before starting, and then ran them for 35 days before stripping, and complained of the excessive amount of dirt and dust he got, on local Middling cotton. He reported further that when he had decreased his flat speed 50 per cent, as recommended, his breaking strength went down. He said he felt the cards should be stripped—or "cleaned" as he termed it—at least once a week, using the hand roller. As to the loading of the flats, he said he found about six ounces, but no more for several days, and then at the end of a week there was about the same amount as after the first day, carding 18 pounds an hour. He said the clothing strips much easier than the knee wire.

J. M. Jordan, overseer of carding, Swift Mfg. Co., Columbus, Ga., reported on their experience with the clothing, the question having been assigned to Frank K. Petrea, superintendent. Mr. Jordan said they clothed a card on January 22nd—using the straight wire on the cylinder and another new wire, with the knee closer to the foundation than ordinarily, on the doffer.

"We put the card on this on January 22nd, and ran it 137½ hours, on solid black colored work. We stripped the card and got 7.17 ounces of cylinder strips and 5.03 ounces of doffer strips. We made only a four-hour test on the flat strips and got 17.43 ounces, and the flyings from the same four hours run were 13.85 ounces. After this stripping we ran the card for another 187 hours and stripped it again. Between the two strippings we did a light grinding for about nine hours. The cylinder strips on the second stripping were 6.5 ounces, doffer .5-ounce, flyings 14 ounces. Yesterday that card had run 325 hours without any further stripping, and on the second run we did not have an end come down on the card. On the first run we had three ends down, one caused from the coiler head gear slipping, one from the lap running

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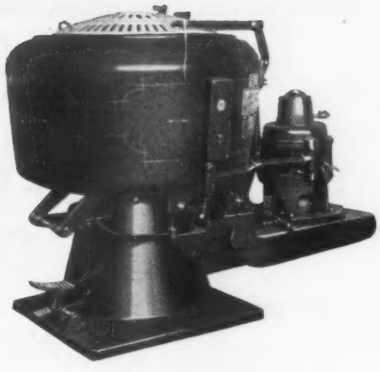

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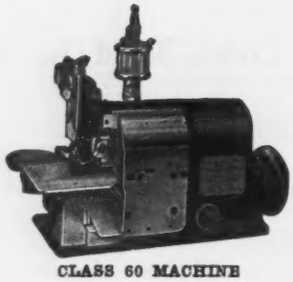

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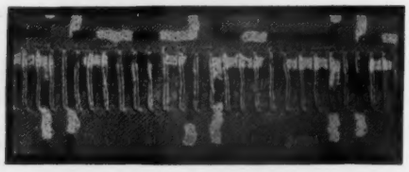

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out and the other from leaving a door to the room open."

In answer to Mr. Butler, Mr. Jordan said, with regard to the character of the flat strips, that there is not so much good fiber in them as in the regular strips. He added that the sliver coming out of the card is heavier by about 1½ grains a yard; due to the cylinder not holding the fiber in the strips.

Mr. Jones, in answer to Mr. Edwards, said his original flat speed was around 2½ inches per minute. Mr. Jordan said that up to the present he had made no tests on yarn breaking strength from the sliver carded with the straight wire.

I. L. Blaylock asked G. S. Jones if he had any difficulty with the straight wire clothing in wet weather, and Mr. Jones replied negatively.

Percentage of Card Strips.

The next question asked what percentage of card strips is being taken out, and for means of reducing card strip percentages in carding lightly. V. J. Thompson cards 210 pounds a day and takes out 2¼ per cent strips. J. C. Edwards reported 3½ per cent carding 83 pounds, and C. K. Lawson reported 5 per cent on 80 pounds per day. There were no specific remedies offered to reduce the percentage. Mr. Edwards suggested slowing down the flat speed, and Mr. Elliott suggested controlling the card strips by increasing the distance between the cylinder wire and the flat wire—setting to a 14 or 16 instead of a 10 or 12. A man from LaFayette said he had not tried the reducing of flats, but once worked at a mill where it was desired to increase the amount of flat strips, and this was done by increasing the flat speed. He said that at present he is taking out 4½ per cent, carding 100 pounds a day.

Renewing Drawing Frame Rollers.

Next came an inquiry as to how to determine when drawing frame roll collars become badly worn, and the practicability of having the collars renewed. Practically all of the men who expressed themselves on this point were agreed that by far the most satisfactory way to renew the collars was to purchase new ones. R. A. Field, O. G. Murphy and C. K. Lawson were of this opinion. Mr. Hames reported that at the Augusta meeting, which he attended, several men had reported satisfactory results with re-necked rolls. One of these, Mr. Jones, added that his satisfaction came only after he had sent the rolls back several times to get the work on them perfected.

"When I was at Tallapoosa, Ga.," said Mr. Lawson, "Mr. Pearce sent some drawing rolls off for renecking, but his experience with them was so unsatisfactory that he junked them and got new rollers.

"However, at Cedartown I am trying something new which I believe is good. I have cut my weights on drawing half in two, and gotten a better breaking strength by five pounds. I have been doing it for about a year. I run a 66-grain sliver, and have 8 pounds on the front roll, 10 on the second, 12 on the third, and 14 on the back. It runs the rolls close enough together and there isn't so much friction on the collars. I put eight ends up at the back on the

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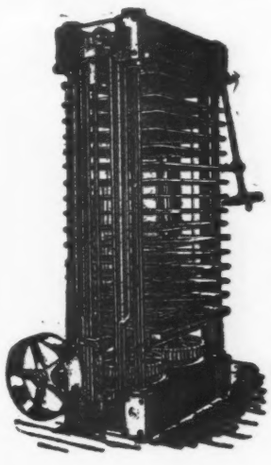

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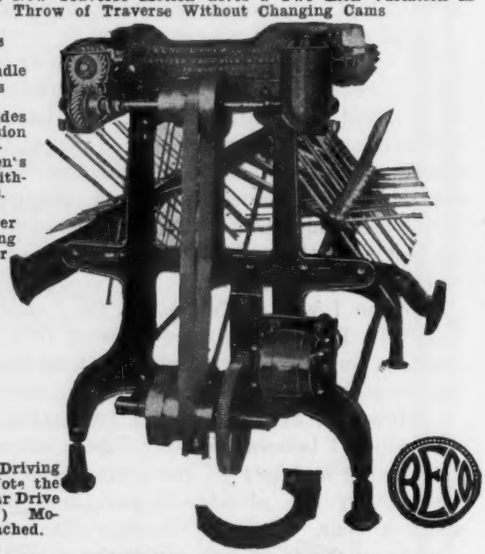

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breaker drawing, and six ends up on the finisher."

Here Mr. Edwards told of an experience in using a screw with a jam nut to tighten drawing rolls upon wearing, which was very unsatisfactory.

The next question asked for comparative results on slow speed, one-process drawing against two processes. Only one man discussed it—V. J. Thompson said he has been running one-process drawing for about eight years, and can tell no difference in the running qualities, evenness, etc. He runs one process at 217 r.p.m., against two processes at 440 r.p.m., before changing. He has a 1⅜-inch front roll.

"Do you oil the bolsters and steps on fly frames, or just oil the steps? What is your method of lubricating the bobbin gears?" was the next question.

J. M. Glass, of Shawmut, when called on, said he does not oil the bolsters at all, but oils the steps once a month, and the bobbin gears every Monday morning. J. T. Gladney, of Dixie Mill, reported a similar practice of not oiling the bolsters at all, lubricating the steps every three weeks, and the bobbin gears weekly with a heavier oil. He said he had not oiled bolsters in eight years. The reason, he explained, is to eliminate black oil spots. He said he could notice no excessive wear on the bolsters.

George S. Elliott here described the system used by his overseer of carding, R. O. Wilson, at New Holland. He said, "he has not done away with oil, but when he oils the bolsters he runs the carriage down and takes a piece of oily waste and wipes the spindles, weekly. That leaves a thin film of oil on it, and it seems to be satisfactory in all respects. The steps he oils once a month, and bobbin gears weekly, lifting them up and putting a few drops of oil in there."

Mr. Wilson at this point asked if anyone was troubled with rust on the spindle where it goes into the collar of the flyer. Mr. Jones said he had eliminated this by taking a small piece of waste saturated with oil, and having the frame hand grease the top of the spindles with it.

The final question on the questionnaire, with reference to the best method of creeling fly frames, developed the fact that it seems to be a more or less universal custom among the men present to creel as the bobbins run out.

There was a brief discussion at the end of the meeting with reference to an all-metal, imported card clothing, brought up by Mr. Blaylock, of Lexington, N. C. Mr. Blaylock described it as being designed similar to licker-in wire, requiring no grooving of the cylinder in applying it. He said it should be cleaned in order to remove the seed which lodge in the teeth, and that the hand roller method of cleaning is best. He has had one card equipped for about six weeks at the time of the meeting. The wire is applicable on both doffer and cylinder, he said, and also stated that after a preliminary grinding for smoothing upon applying it, the clothing needs no grinding at all. He is now installing the wire on three other cards.

This concluded the discussions, and the meeting was adjourned. The next meeting of the organization, to be held in September, 1929, will discuss slashing and weaving subjects.

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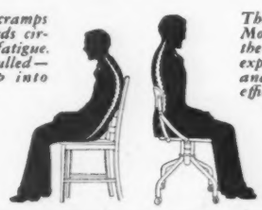

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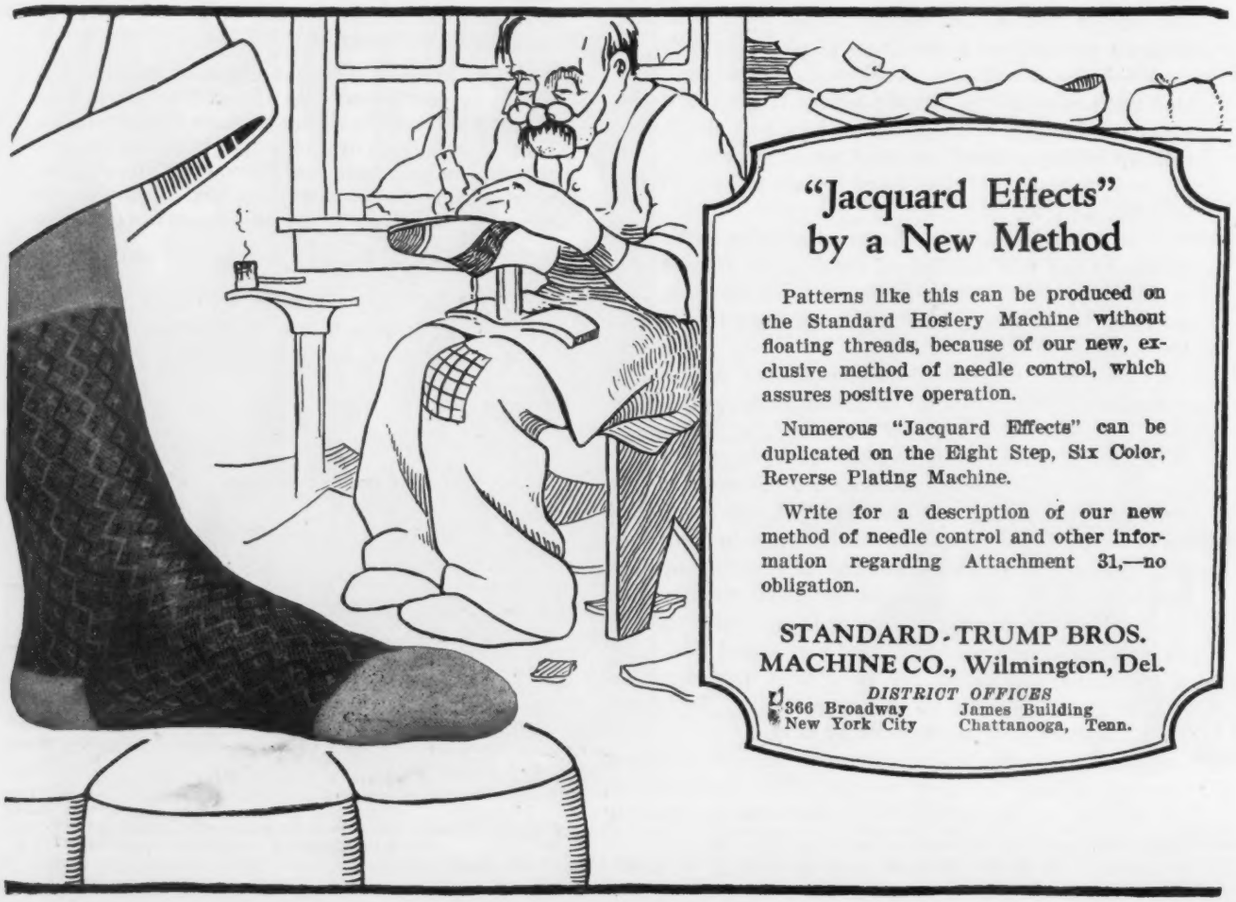

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Augusta Meeting Discussion.

(*Continued from page* 623.)

that was one reason for the change. Mr. Ellis expressed the belief that, under average conditions, the speed of drawing rolls in most of the mills could now be reduced by 20 per cent with improved results, still being able to keep up production. This led to an inquiry as to the prevailing speeds for front drawing rolls. Everyone present was under 300 r.p.m., and quite a few under 250, and some under 200 r.p.m.

Mr. Jones here pointed out that some people "load up" their drawing hands with too much work, and crowd them. He said they formerly paid drawing hands by the day, but have installed hank clocks on the frames and now he keeps up with a 50 per cent reduction in speed.

Creeling Drawing Frames.

The next discussion was with reference to creeling drawing frames, one end at a time, or a whole head or frame at a time. Most of those present indicated they creel one end at a time, although Mr. Corn and one or two others believed it better to creel three or six ends, or else a whole frame, at a time. The former group stated mainly that lack of room for storing spare cans necessitated that method, although Mr. Corn pointed out that it required very little more space.

Mr. Jones then explained a method he uses for creeling fly frames, stating that he now has his hands creel every other bobbin, instead of taking them in order, thus giving a full and a half-full bobbin going to the same spindle all of the time. He believed he eliminated so many piecings on the same bobbin, though others explained that he did not actually reduce the number of piecings necessary. Mr. Drake said he had read something of this practice recently in the discussion department of COTTON, where it was advocated as a means for using a larger bobbin. Mr. Jones agreed that, while this had not been his primary object, he had found himself able to do this with the result that he creels three times a day now instead of four, as formerly.

It developed out of this discussion that it is general practice among those present to run the strands from the back top and front rows in the creel together, and those from the two back bottom rows together.

Proper Weights for Drawing Rollers.

P. W. Ellis here asked for discussion as to the proper weights for metallic drawing rollers. He explained that he is now changing some leather-roll drawing to metallic rolls, and in taking the matter of weights up with machinery manufacturers, finds a variance in their recommendations. Some suggest 14 pounds all the way, others 14, 16, and 18 pounds, etc., etc.

Mr. Jones replied with an experience he had had. "When I first came to Sibley, I found the drawing about equally divided between old Saco-Pettee and Howard & Bullough frames. The Saco-Pettee had two

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14-pound weights, then a 16-pound weight on the third roll, and an 18-pound on the back; the Howard & Bullough had 14-pound weights all the way back. It seemed all of the drawing was not running the same, and I had extra weight put on the Howard & Bullough frames. I added four pounds to the weight on the back roll, and two pounds on the third roll, and this helped the work considerably." He added that as an experiment, he tried running the Saco-Pettee frames with 14 pounds all the way, and did not get good results.

In connection with the drawing rolls, Mr. Ellis reported he had found some of the weights to be as much as two pounds at variance to what they were marked; for instance, he found some weights marked 16 pounds that weighed 18 pounds, etc. Mr. Roberts reported similar findings and said he has checked his weights and has had them all stenciled with the correct weights.

The chairman suggested experiments in lightening up on the weights. Mr. Roberts said that at Laurens he had reduced the weight on the front roller to 9½ pounds, leaving the others 14, 16, and 18 pounds, and got excellent results. There was some discussion here also with reference to drawing roll settings and drafts. Mr. Connelly said one thing that had always puzzled him about a drawing frame is that you can take a frame with 1⅜-inch rolls back and front, and a draft constant of 2.50, draft of 5.25, and figure it all right; but take a frame with a 1⅜-inch roll in the back and a 1¼-inch roll in front, and the constant of 2.28, and it will not figure out right. Mr. Whitehead of Graniteville reported that he is opening his rolls and proportioning his break drafts 1.25 between back and third; 1.7 between third and second; and 2.3 between second and first. He said he notices less broken fibers.

Use 7s Emery on Grinding Rolls.

Mr. Bayne said he is using a 7s emery for grinding 100s wire on Western cotton, and wished some discussion on this point. Mr. Ellis said he had changed from a 40s to a 7s, on both traverse and drum, and likes the 7s better because it is coarser and has a few more barbs on it, and seems to grind the sides of the wire and produces more of a sharp edge. He grinds three cards to the clothing.

G. S. Jones reported good results by speeding up the grinding roll on the cylinder, but not on the doffer. He is an advocate of grinding faster for a shorter length of time; he grinds about four hours. Mr. Corn asked whether anybody else present was grinding less than 12 hours, and none indicated that he was.

Messrs. Jones and Waits here reported exactly opposite experiences on a given point. Mr. Waits said he found some drawing with the rolls closed up, and slackness in the strand between the front roll and calender roll. He spread the rolls and the ends tightened up, and when he closed them again the slackness reappeared. Mr. Jones said he did the same thing, but when he opened his rolls it tightened up the strand.

"Has anybody had any drawing rollers re-worked?" asked Mr. Jones. Mr. Ellis reported that he had this done, and was using the same draft gear with the re-worked rolls, but that he had to change the tension between the front roll and the calender roll. Mr. Jones said he had tried re-working rolls, but they were not of the right diameter when returned from the people who did the re-working. Mr. Ellis explained that it is necessary to gauge the collars with a micrometer—not calipers—and that he should send them back until they were made of the proper diameter. He added that he has done this, with satisfactory results, at three mills, and at the present time is having spinning rolls re-worked in the same manner.

This practically concluded the discussion, and the meeting was adjourned with an appeal from the chairman for more active experimenting on card room subjects before the time of the next meeting.

Use of "Rayon" Not Mandatory.

Celanese Corporation of America, 180 Madison Avenue, New York City, has issued a bulletin concerning an announcement of the Federal Trade Commission, issued on February 1st, regarding the use of the term "rayon" in connection with synthetic textile products. The announcement points out that the resolution adopted by the commission on October 31st, 1925, recognizing the term "rayon" as meaning and properly designating the artificial silk products, the base and chief ingredient of which is cellulose, is to make the use of the term "rayon" permissive, but not mandatory.

Long Distance Rates Reduced.

A reduction in day rates for toll and long distance telephone calls in the Bell System, representing a saving to the public annually of more than $5,000,000, became effective on February 1st. This reduction, the third in a little more than two years, affects calls between points from 130 to 1490 miles apart. From five cents to twenty-five cents has been cut from the charges for station-to-station three-minute calls within the specified distances. Middle distance station-to-station rates will enjoy a reduction of as much as 13 per cent, while an equivalent saving will be made for person-to-person service. Evening and night station-to-station rates remain at their present level.

A New National Color.

National Diazine Blue 4RL Concentrated, is a Developed Dye recently placed on the market by the National Aniline & Chemical Co., Inc., 40 Rector St., New York City. With National Developer B, it produces a reddish-blue shade characterized by fastness to water, sea water, perspiration, organic acids and rubbing, and good fastness to light, washing and alkali, the company states. The company also states that the new dye will find its greatest application in the production of navy blues on cotton, rayon and silk. Excellent dischargeability with hydrosulphite, together with suitability for use in combination with any of the other dyes of this class, according to the company, makes the color a particularly applicable product for the printing trade.

Herman A. Metz Prize Winners.

It is the annual custom of the Hon. Herman A. Metz to award prizes to those pupils of the Textile High School, New York, who display the greatest proficiency in their chosen branches of study. The winners this year are: Batik and Dyeing: First prize, Dorothy Neuschwander; Second prize, Chi Ju Chen. Chemistry and Dyeing: First prize, Leonard Levinson; Second prize, James Colligan.

Addition to Borne Scrymser Company Staff.

Raymond Kohler is now associated with the Boston office of the Borne Scrymser Company, as sales representative, through New England, for Breton twister ring grease, Brilliant Oil AX and other lubricants. Mr. Kohler was formerly associated with the Edward Rose and Huntley and Company.